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ABSTRACT

Twelve reports comprise this collection from the 1989 Arizona State Association Conference: (1) "CD ROMs Teach Online Searching" (Susan Awe); (2) "Collection Development as Intellectual Activity: An East Asian Specialist's View" (Ju-yen Teng); (3) "Computer-Assisted Reference Service in Map Librarianship: Electronic Access to Cartographic Information" (Charlene M. Baldwin and Jack D. Mount); (4) "Crossing Borders: From Slip Catalog to OPAC" (Margaret F. Maxwell); (5) "Expanding the Borders of Educated America: The Librarian's Role in Recruitment and Retention of Minority Students" (Jeanne L. Pfander); (6) "From Equal Opportunity to Affirmative Action: Changing Hiring Practices at the University of Arizona" (Merri Hartse, Atifa Rawan, and Roger Scanland); (7) "Going Offline (sort of): The Impact and Implications of CD-ROM and PAC Databases as Online Alternatives" (George Machovec and Dennis Brunning); (8) "Homage to Melvil Dewey: The Need for Library Standards in Archival Description" (Robert P. Spindler); (9) "Interdepartmental Cooperation--Making the University of Arizona Library Stronger" (Janet S. Fore and R. Cecilia Knight); (10) "Library Express: The Establishment of an Across-Campus Document Delivery Service" (Sheila Walters); (11) "A Model for Resource Sharing" (Janice Bradley); and (12) "Researching Interdisciplinary Topics Online: A Methodology for Evaluating Databases" (Karen Williams and Ruth Dickstein). (SD)

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ARIZONA STATE LIBRARY ASSOCIATION

College and University Libraries Division

CROSSING BORDERS

NEW TERRITORIES IN THE 90'S

Contributed Papers

Presented at the Arizona State Library Association Conference
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CD ROMS TEACH ONLINE SEARCHING

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CD ROM's are expensive, and they are proliferating daily. CD's are a self-contained, convenient and attractive storage and retrieval medium. Today they generally access bibliographic databases. However, the print version can rarely be discontinued. An exception we made at Northern Arizona University is that we withdrew the Educational Resources Information Center (ERIC) paper indexes for 1966-79 when we purchased DIALOG's ERIC CD ROM and its back file. Very daring, and we have not regretted it so far. CD ROM's, at this point, have two major disadvantages: a) only one user at a time and b) a limited time coverage. Even though initial user response is overwhelmingly positive, librarians and library administrators need good reasons for investing in this technology.

Besides the advantages to patrons of convenience, fixed pricing, accessibility, speed, and storage capacity, CD ROM's can be used to teach online searching skills. Right now, these courses are mainly peopled by library science and education students. However, in the near future more students from many other disciplines will see the value in learning subject searching skills to develop research strategies.

At the Northern Arizona University Cline Library, the ERIC CD ROM from DIALOG was introduced at the beginning of the summer session in 1988. The education reference librarian expanded her "Introduction to ERIC" seminars to include the CD ROM database. Almost immediately the ERIC database was in constant use from the opening of the library at 7:30 a.m. (and before, as reference librarians came in to do searches) to closing at 10:00 p.m. through most of the summer session. The faculty as well as the students were amazed and delighted. Online searching of ERIC decreased from 135 searches in the summer of '87, to 90 searches in the summer of '88 (mostly students who could not get on the CD) to 12 searches in '89 when a second ERIC workstation was added. Library patrons were not required to attend the introductory seminar in order to use the ERIC CD. Menu searching of ERIC was simple enough to use on a walk up and read the instructions basis for most education students familiar with ERIC, though developing search strategies involving the Boolean operators and the controlled vocabulary was sometimes confusing. Reference Desk staff spent quite a bit of time helping the new ERIC searchers and most users went away happy.

The first online subject searching course was offered in the spring of 1989 for several reasons: a) to try to determine how much time it takes to teach a user the basics of Boolean logic and free text/controlled vocabulary, and b) to determine reliable methods to teach searching on different CD ROM databases. The standard policy at NAU is to allow students who meet prerequisites to take any level course. For this pilot project, no prerequisite courses were required. No special advertising or marketing methods were used to attempt to attract students to the course, and the course was listed under the library science section in the Spring Class Schedule. Twelve students enrolled and ten students completed the course. Important background characteristics of the students were: eight had completed the library science basic reference course at NAU, three were elementary education majors, three were non-degree graduate students, and the other four were majoring in physical education, forestry, English, and undecided respectively. The three non-degree students were working at the local public library. One of the students had an MLS.

The two command languages taught were 1) DIALOG and 2) WILSONLINE in that order. The available databases to search were DIALOG's ERIC and WILSON's Government Publications and Index to Business Periodicals. COMPACT DISCLOSURE and Books In Print Plus CD's were demonstrated in class as well as Newsbank and the 1986 version of the Grolier encyclopedia. The public library also had InfoTrac's General Periodicals CD.

The objectives of the course were:

a) to teach students how to develop a search strategy;
b) to use the search strategies to efficiently access information thru menu options on CD ROM databases;
c) to access information using online search commands; and
d) to analyze the results of searches and improve the results.

One of the most important and difficult concepts to teach is the understanding that automated database searching is a partnership between the user and the computer. The present generation of computers is interpreting information literally, by inference. Therefore, users must learn how to have the computer retrieve the information that they want. If computers were "smart" enough, we wouldn't have to learn commands or use menus to ask them questions; we could just ask our question. Maybe some day computers will be capable of doing that. Right now it is important to teach users a simple searching model which delivers good results without introducing complexities likely to discourage them. The search strategy is a two-fold process: 1) know what to do, and 2) know when to do it. Searching is probabilistic and students tended to lose control and organization when involved in more complicated searches. They also tended to use too few synonymous terms and too little truncation in their strategies. The more general queries yield very complicated strategies. Searching is an interactive activity and some found it difficult to adapt to changing conditions as a search proceeded. It is a trial and error task followed by adjustments to reach a solution or retrieve the data. Good judgment is needed to select queries and sets of records that are likely to retrieve the needed information.

Most of the students had little problem with the Boolean operators of "or" and "and." However, the Boolean "NOT" operator caused the most confusion and it was rather studiously avoided. When using "not," a record is disqualified when the keyword/keywords following the NOT occur in those records which qualify in all other respects. An example in ERIC is: systems 22,522 libraries 8,110 systems systems NOT libraries 10,523. Hopefully, more experienced searchers will see the benefits of this operator in narrowing their searches.

The next most difficult concept was "TRUNCATION." The ERIC CD shows you all the words and phrases that truncation picks up, unlike online searching of ERIC or any of the DIALOG databases. When you "select" a keyword like "library" the computer brings up records which have library and phrases after library, i.e. library book, etc. When you put in "librar?," records containing librarian(s), librarianship, libraries, etc. are picked up. When you just "select lib?," you greatly expanded the number of records brought up or hits; unlimited characters beyond the stem is a very broad search. However, you also bring up more irrelevant records. Students tended to use "library or libraries or librarian or librarians" rather than truncating. Their searches tended to be more precise but often had negative requests. Therefore, the students tended to use truncation less than I had as an online searcher who learned to search online. Since working with the ERIC CD database, I also tend to use more care in truncating. The next example, "S librar? ?," which is limiting the truncating to a maximum number of letters seemed to cause quite a bit of trouble. This example permits just one additional character to be added to the stem of l-i-b-r-a-r-? ? Too much complexity was studiously avoided.

In "Name Searching," the "EXPAND" command was used extensively and effectively, after it was understood. And, it was not just used in Name Searching. The Expand command was used extensively in browsing the indexes. The importance of using the expand command to look closely at the inverted file for personal or company names, etc. was easily apparent to all.

The "Descriptor or Index Term Phrase" selection was another source of confusion. Students inclined to put in "migraine headache/de"; the "de" is redundant for phrases as only phrases are stored in inverted files as descriptors. Using the more powerful "select steps" command and searching the two words in the phrase, "migraine and headache," gave more flexibility to the searcher. This discovery was slow in coming to most of the new searchers. Even more confusing was the weighting of terms, i.e. using "migraine headache/maj." Weighting of terms is used well and extensively in ERIC; by experimenting a great deal, the importance of weighted descriptors became more apparent. In large databases, when searchers must include a common word in the search being able to use "secondary education/maj" greatly improved the search for relevant results. Naturally, more than one student put "instruction" or "education" into the ERIC database as a free-text term with disastrous results but a good learning experience!

"Proximity Operators" were introduced late in the learning process. In DIALOG commands, the proximity operator "w" or ( ) empty parentheses is a special type of Boolean "and" operator which stipulates that the two keywords it connects must be in the keyed order and contiguous. Explained in that context the students enthusiastically used this powerful convention. Some of the students experimented with the other operators available, "F," "L," "N," and "S."

After the science part of searching is understood, the more difficult art part can be tackled. The potential for continuing a search is limitless, but a good searcher knows when to quit. Searching is not an answer to a problem but another resource answer a part of the question. A search is also terminated when:

1) the user is satisfied that enough relevant documents have been found; or

2) the query is returning too many irrelevant documents.

When using CD ROM's, cost is not a factor, unlike online searching. In online searching, searchers are forced to stop and exam results to try to understand what is being retrieved, and if the records are what is needed to answer the query. The students tended to "beat a dead horse," not always knowing when to quit.

The problem is then "What is a good search?" That's a very difficult, challenging question. The paradox is that searching is easy to understand but applying it is difficult. The benefits of experience in subject searching is significant and indisputable but they don't explain differences in individual performance or success. In online searching, the economic efficiency factor is a prime concern in performance measures; but there is no per search charge on CD ROM's. Therefore, performance efficiency or effectiveness is measured only by user satisfaction with the result.

The following measures of quality concern users/searchers:

1) Precision is the ratio of the number of relevant citations retrieved over the total number of citations retrieved. As precision increases, relevant citations are lost. Inversely, as a searcher increases the number of relevant citations, the number of irrelevant citations increases.

2) Pertinence is the total number of citations delivered to the user that are judged to be pertinent or relevant to the user's purpose over the total number of citations retrieved. This pertinence or relevance factor is of the utmost importance; it is the key ingredient in the criterion of retrieval success.

The most important conclusion of my experience in teaching subject searching is that searchers taught on the CD ROM products, without the time or cost factor, or the "meter running" are initially less efficient searchers. They didn't stop to evaluate results often enough and did not spend much time analyzing their strategies to improve results. The students spent their practice time keying in different key words and phrases, using trial-and-error much more than thought and analysis. Perhaps even more emphasis needs to be placed on this phase of learning subject searching.

Additionally, it took an estimated three hours to teach the basics of searching with the menu options:

1) one hour to teach how to divide a question into concepts and translate those concepts into terms.

2) one hour to explain and demonstrate Boolean logic and free text vs controlled vocabulary searching. (These two hours should be held consecutively but with a break between them.)

3) a follow-up hour for questions and for evaluating some of the students' searches to improve the results.

This past September at NAU we only offered two-hour training sessions on ERIC due to a shortage of librarians. However, next semester we hope to offer three-hour workshops on searching ERIC and PSYCLIT. In any case, the everchanging computer technology has been and will continue to impact greatly on library research; and librarians will continue to lead searchers in making the best use possible of the new technologies.

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COLLECTION DEVELOPMENT AS INTELLECTUAL ACTIVITY: AN EAST ASIAN SPECIALIST'S VIEW

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INTRODUCTION

This essay attempts to argue the thesis that, from the point of view of an East Asian specialist, collection development is an intellectual activity that requires a high level of training and specialized knowledge in order to do the job well. This thesis is in sharp contrast to one of the current concepts of collection development which regards that process as technical activity and, consequently, would put it under the charge of a technical service department or division to be handled by technical service personnel. Nowadays many libraries have practiced this latter form of collection development irrespective of its highly non-technical, intellectual qualifications.

Three factors seem to account for the difference between these two positions. One, the understanding/misunderstanding of the concept of collection development. Two, the rationale of expediency in using current employees to carry extra workload in an attempt to beat budget constraints. And three, the confusion of some librarians who mistake language for culture and thereby discredit the high level of intellectual involvement in the process of developing a collection. At bottom, however, it all boils down to one issue, i.e., what is the level of intellectual involvement in collection development and acquisitions. The question to be asked here is: How much and to what degree are intellectual activities involved in collection development and acquisitions, respectively? The hypothesis proposed here is that the intellectual activities involved in collection development are extremely high.

The activities of collection development and acquisitions both have intellectual and the technical aspects. The difference between them is only a matter of proportion and degree. On the one hand, technical services staff such as a cataloger or an acquisitions librarian do need to know the contents of the publications to a certain degree in order to perform their duties. The technical aspects of their activities such as ordering, receipt, and cataloging, however, does stand out prominently and, as a consequence, outweighs their intellectual involvement in their routine operations. That is the reason why cataloging and acquisitions are units under the division of technical services in the library and their services are called technical services. On the other hand, collection development activities such as liaison with users, selection, and evaluation, do require a much higher degree of intellectual involvement, the major one of which is specialized knowledge of the field and subject in order to meaningfully communicate with clientele, evaluate the merits of each item under consideration for inclusion, and make an intelligent decision in regard to selection.

Pointing out the distinction between intellectual and technical aspects, however, is by no means to imply or place value judgment on either of them. The distinction only serves to signify two different types of library activities, each of which has its own value, function, and purpose. Both are invaluable and indispensible for the library, and respected by all colleagues.

In defense of my thesis, I shall try to offer two types of evidence to support my argument. One, authoritative documentation; and two, my personal experience as a librarian responsible for the collection development of the East Asian areas, especially the field of China Studies. Specifically, I shall argue my thesis in the process of answering the following two sets of questions.

1. What is collection development? And why it is an intellectual activity?

2. Who should do the job of collection development? Or what are the qualifications of a bibliographer, or a selector, or a subject/area specialist? Where should be the place of collection development in the organizational structure of the library?

WHAT IS COLLECTION DEVELOPMENT?

A collection is the core of the physical existence of a library. Without a collection, there would be no library. A library's existence depends practically on, and its activities revolve around, its collection. At the risk of over-simplification, the activities of a library may be summed up as concerns with the following three areas: One, how to build up and develop the collection (collection development); two, how to manage and control the collection (technical services); and three, how to utilize the collection (public services).[1] For some reason, however, the first area has been largely neglected or only minimally addressed in library literature until very recently.[2]

One reason why collection development has been neglected or underdeveloped is that some librarians have either confused it with acquisitions or made no distinction between them at all. The confusion or equation of these two concepts has resulted in "a fairly fuzzy picture" in the minds of many librarians, as Gail A. Kennedy put it:[3]

"Although collection development is generally interpreted as selection and related activities while acquisitions is ordering and receipt, the terms have unfortunately been used interchangeable in library literature. The result is a fairly fuzzy picture in which acquisitions may be all or part of the collection building effort and collection development may be either a separate function or one subordinate to a larger whole."[4]

But why the confusion? Why are the two terms being used interchangeably in the library literature? And, indeed, why the practice of using acquisitions staff to handle collection development in many libraries?

The confusion seems to be a result of a lack of a clear understanding of the two concepts on the part of some scholars and librarians. It also seems a result of the lack of will on the part of some high-level library administrators to put the two distinctive functions in separate but closely related operations. An attempt, therefore, at a clarification of the confusion seems to be needed, and serious reflection on the problem seems to be in order.

The central figure of the scenario of collection development is by definition the collection. With the preliminary understanding of the phrase "collection development" as "to develop the collection," two aspects of the concept should be noted, i.e., the external and the internal aspects. The external aspect is concerned with the question: For what purpose and

why we do collection development? And the internal concerns are concerned with this question: What is the nature of and how to do collection development?

To address the external aspect of collection development, it is necessary first to explore the environment of the collection. It appears that the immediate and most closely related partners of the collection in regard to its development are the collection developer (may be called selector, bibliographer, subject/area specialist, or collection development officer), and the users (both current and potential). Four relationships exist among them: one triangular (among the developer, the collection, and the users) and three bilateral (between the collection and the developer, the collection and the users, and the developer and the users). Collection development is primarily the interactions among the three parties.

The purpose of collection development is to meet the changing information needs of the users, as a library always does. The reason why we do collection development is because the four relationships existed in the scenario of collection development need to be smoothed out in order to efficiently and effectively satisfy the changing information needs of the users. As Patrick J. Wreath put it:

"At one level, the term (collection development) refers to the academic and intellectual involvement of a selector as he or she relates resources to educational programs, to complex research projects, and to the specialized requirements of varying--often unarticulated, often transitory--research and study methodologies."[5]

Recently, ten years after the publication of Wreath's article, Edward G. Evans echoed Wreath's opinion on the definition of collection development as follows:

"Collection development is the process of making certain the information needs of the people using the collection are met in a timely and economical manner, using information resources produced both inside and outside the organization."[6]

As we can see from Wreath's definition that the nature of collection development, which is the involvement of a selector who relates resources to users, is designated as "academic and intellectual." It is clearly implied that in order to do a good job of collection development, a selector has to be reasonably familiar with the contents of the "educational programs," the "complex research projects," and "the specialized requirements of varying...research and study methodologies." In my opinion, he/she should also keep track of the progress and changes of these intellectual activities in order to keep abreast of the situation These are all part of the job of collection development that are highly intellectual in nature.

Evans' definition also presupposes a certain intellectual level in collection development. Prior to meeting the information needs of the users of the collection, a librarian has to know the intellectual contents of the users' disciplines and of the library's collection, and thereby tries to develop the collection in such a way that these needs may be satisfactorily met. All these activities of collection development are intellectual in nature--indeed, even highly intellectual.

Another way to look at the nature of collection development is to look at the way the collection is being developed. As implied in the above-mentioned definitions of collection development, a collection should be developed by plan, by steps, with purpose, and with an organic growth as a result. Albert Perdue put it very admirably:

> "Collections, to qualify as such are constructed by design. The purpose of selection being not merely to accrue but to assemble, the titles which are finally chosen for a collection ought to have a connection with one another. . . Therefore, while the worth of a collection will vary with its extent, utility, and uniqueness, the degree to which it constitutes a collection and not merely an accumulation rests entirely upon the performance of the selector whose function it is to ensure that growth is organic and purposeful."[7]

Again, all these activities of collection development are highly intellectual both in content and in nature. It is inconceivable that a selector who is unfamiliar with the intellectual content of the collection and the needs of the users will be able to do the job.

As to the second part of the question of the internal aspect of collection development--how to do it? I would like to use my own library experience to illustrate the intellectual nature of the work of collection development. In my own field, East Asian studies, and China studies in particular, the case may be even more clear. Due to the budget constraints, it is necessary for me to talk to each faculty member and graduate student of the field to know their individual research interests and teaching programs in order to meet their information needs "in a timely and economical manner." These talks are definitely highly intellectual; the field of China studies covers not only the three thousand years of Chinese history, but every discipline of the humanities and social sciences (ion principle, the Oriental Studies Collection does not collect materials on natural sciences and engineering) that has something to do with China. Just think of the long chronological frame of the Chinese history and the important events, people, and literary works of each epoch, as well as such disciplines as archeology, Buddhism, Communism, comparative literature, Confusianism, drama, economics, foreign relations, geography, history, journalism, language, linguistics, literature, philosophy, politics, psychology, religion, Taoism, and women's studies. It happens that each of these subjects has at least one or two faculty members or graduate students who specialize or are interested in each. As a "collection developer," I have to know enough of these fields in order to have a meaningful dialog with my clients. The talks with them have to go deeper than just superficially "name dropping" on each topic we touched upon in order for the dialog to be informative and useful.

After the talks comes the work of matching the users' needs with the collection and the work of selection of materials for acquisition. Dialogs with users will continue, however, for many formerly vaguely defined viewpoints and newly emerged problems may need further clarification and explanation. All these activities, which are part of collection development, are surely permeated with strong intellectual odor and flavor.

On the other hand, the activity of acquisitions tends to be more technical in nature. As William J. Myrick defined it: "The term acquisitions...refers to the most part to the procuring of materials--their verification, order, receipt, payment, and so on--rather than their selection."[8]

Nancy J. Williamson also concurred with this idea:

> "...acquisitions was...those functions and operations of a library

> or information resources center which pertain to the actual procurement of bibliographic items. That is, those procedures which take place from the time an order is generated to the dispatch of the item to a cataloging department."[9]

Overall, collection development is a series of library activities of which acquisitions is a part. As Wreath put it:

> "And collection development is commonly interpreted to mean, or at least to involve, a great number of library activities, including: the selection of resources; the acquisition of those materials selected; the development of plans for sharing resources between libraries; the maintenance of resources acquired (notions of added copies, weeding, and replacement); the conservation and preservation of materials (of both general stock and the special collections); even decisions related to the location of resources in a large library complex."[10]

Evans concurred, but put it a little differently. He visualized that library administration usually oversees nine types of operations in regard to its collection, namely, identification, selection, acquisitions, organization, preparation, storage, interpretation, utilization, and dissemination. Collection development includes the first three of the nine.[11]

Both Wreath and Evans seem to advocate the idea that the work of collection development would be incomplete without acquisitions. But this is only a looking at the matter from an administrator's view. The working staff would still regard them as two distinctively different types of activity. For their nature, preoccupations, functions, and purposes are entirely different from each other.

WHO SHOULD DO THE JOB OF COLLECTION DEVELOPMENT?

My field, China studies, needs an area specialist to do the job of collection development. Chinese language is obviously the first pre-requisite for the position. But there is a misconception widely held in some quarters of the library profession, that knowing the language is good enough for the job. The reason for this misconception seems to be that historically, the responsibility of selection of foreign materials for academic libraries fell on the shoulders of faculty members. The acquisitions librarian needed only to know the language to verify the orders, check the receipts, and make sure that every item was correctly ordered, received, and paid for. Later on when the responsibility of selection shifted to the hands of the librarian, the "tradition" lingered on for two reasons: One, the difficulty of finding a qualified librarian who had the language skills as well as the required special knowledge; and two, the false logic that knowing the language is knowing the culture. The truth of the matter is, however, that language is no substitute for knowledge. Language is only the first step or the starting point for acquiring the knowledge of the foreign people who speak that language. Area specialists need them both.

The importance of specialized knowledge can never be over-emphasized. In this age of budget constraints, few collections can afford to purchase every item. The only way to deal

with the situation is to be very selective. Selectors have to be knowledgeable enough to choose the right and most worthy items among so many similar titles on a topic. They should also be able to distinguish established authorities of a field from the writers of popular works, and solid scholarship from general treatment of a subject.

Constant intellectual interest in the field is also a desirable quality for the job. Research in the field is always progressing and changing. New events also occur and new "stars" of the field arise. The collection developer should be able to follow these new developments with intense interest. S/he also needs to be interested in reading critical book reviews of the field to help make intelligent selection decisions.

Preferably s/he is also a researcher in the field. For s/he may need to know, for instance, not only what title or information the users need, but also what format the users prefer. It seems rather easy to tell users who complain about sore eyes from reading microfilm too often and for too long, that for the sake of saving money and space they should learn to be patient and to get used to it. A more convincing way might be to go and read microfilm yourself five hours a day, five days a week, for your own research, and then tell users about being patient and getting used to it. Another example would be delivery of information. This is the age of networking and resource sharing. The tendency is to encourage users to utilize interlibrary loan more frequently and to rely less on the home library to provide the needed information. Many researchers feel the inconveniences. A more effective way to persuade them to accept this challenge of the age might be to go through the interlibrary loan process yourself with your own research project as frequently as possible and then come back to convince them with your own experience. All these experiences in the research process, in addition to the advantage of getting to know the collection and the field first hand and in depth, will undoubtly help and area specialist to grow with the collection and become a better collection developer.

CONCLUSION

Collection development has to be organic growth instead of merely accumulation; to be purposeful instead of aimless; systematic rather than random; and directional rather than blind. These are what make collection development an intellectual activity, and the collection developer an intellectual. The procedures of achieving these goals indeed require a high level of intellectual involvement.

Collection development and acquisitions are two important but distinctively different functions of the library. The nature of the former is intellectual, and that of the latter, technical. This distinction means no value judgment; it only tells the difference between them. As a result, it seems better that they be handled by different people and different units in order to achieve high efficiency and effectiveness.

Liaison, evaluation, planning, goal-setting, identification, selection, and reviewing are all part of the work of collection development and require a high level of training and specialized knowledge of the field. The collection developer needs not only the language skills and knowledge of the culture involved, but the intellectual interests in and curiosity about the

development of the area. Preferably s/he is also a researcher of the field so that knows first hand the information needs which will help him or her to become a better librarian in general and a collection developer in particular.

NOTES

1 Bonita Bryant gives only the second and third concerns in this regard; see her "The Organizational Structure of Collection Development." Library Resources & Technical Services. 21 (Apr/June 1987). 111.

2 Ibid.

3 William E. Hannaford, "Toward a Theory of Collection Development." in Collection Development in Libraries: A Treatise (Ed., Robert D. Stueart, Greenwich, Conn: JAI Press, 1980). 579.

4 Gail A. Kennedy, "The Relationship between Acquisitions and Collection Development." Library Acquisitions: Practice and Theory v. 7 (1983), 225.

5 Patrick J. Wreath, "Collection Development--Generalizations and a Decentralized Model." Library Acquisitions: Practice and Theory. v. 1 (1977). 164.

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COMPUTER-ASSISTED REFERENCE SERVICES IN MAP LIBRARIANSHIP: ELECTRONIC ACCESS TO CARTOGRAPHIC INFORMATION

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Public service in cartographic collections has been greatly enhanced recently through the application of automated systems to the areas of bibliographic verification, electronic access to local collections, and electronic publishing of automated reference information. The purpose of this paper is to briefly describe some electronic products and services which make cartographic information more accessible. The discussion is divided into 4 sections: Online Bibliographic Databases; CD-ROM Products; Local Indexing Systems; and Automated Reference Tools.

Online Bibliographic Databases

Searching for bibliographic citations to maps by subject or geographic name has traditionally been a barrier to efficient reference service by map librarians, at times a frustrating experience for map library patrons as well. Until very recently there has been no comprehensive indexing for maps as a distinct publication or format type in either eye-readable or machine-readable indexes. Today, the three major vendors of what we have called the "traditional online bibliographic databases" have taken the lead in providing such access points. BRS, Dialog, and STN International offer map librarians two useful databases.

GEOREF is the premier international database for the geosciences.[1] Its coverage dates to 1785. Maps as a distinct format are included and are indexed as a separate document type: DT=map. Georef is available from DIALOG and STN. Figure 1 shows a sample citation from Dialog. STN allows successful longitude/latitude coordinate searching as well.

The GPO MONTHLY CATALOG includes most maps published by U.S. government agencies.[2] They are not, however, indexed as a separate document type. To retrieve maps, it is necessary to "and" your search with "map or maps" searched free text in the citation. GPO is available on BRS and DIALOG. Figure 2 shows a sample citation from DIALOG.

EPIC is the online database which duplicates the full 20 million records on the OCLC Union Catalog.[3] It is expected to be available by January 1990. EPIC will provide searchability of all MARC fields in a Boolean environment. This has tremendous implications for map librarianship, allowing searching by scale and by full text searching of the title.

CD-ROM Products

CD-ROMs have captured the attention of reference librarians in all disciplines. The recent production and marketing of certain databases on CD-ROM has truly allowed map librarianship to cross the border from time-consuming searching through numerous printed volumes to fast, efficient searching using modern computer technology. Two bibliographic databases recently introduced commercially on CD-ROM are of immediate importance to map librarians.

GEOINDEX, one of three databases on OCLC's Earth Sciences on Compact Disc, one of OCLC's Search CD 450 series, consists of bibliographic citations to more than 15,000 published geologic maps of the United States and its territories.[4] In addition to standard keyword searching, citations may be retrieved by longitude and latitude coordinates and by map scale. Figure 3 is an example of a citation from GEOINDEX. Notice the inclusion of scale, latitude and longitude.

GPO on SilverPlatter includes over 22,000 citations to maps published by U.S. government agencies.[5] Both separately published sheet maps as well as maps in text publications may be retrieved, including topographic, geologic, water resources and forestry maps. GPO on CD-ROM, unlike its online counterpart, indexes maps as a separate document type. Figure 4 shows a sample citation. Considering that U.S. government agencies are the source for most sheet maps produced in the U.S., GPO is an important reference tool for map collections.

Other bibliographic databases on CD-ROM that treat cartographic materials, but in a more limited way, include Agricola, NTIS and Selected Water Resources Abstracts. Databases on CD-ROM exemplify the benefits that electronic retrieval has over its printed or online counterparts. CD-ROMs provide flexibility, a fixed cost, and a valuable time-saving service to the library patron or end-user.

Local Indexing Systems

A third way in which cartographic materials are accessed electronically is through local library catalogs of cartographic materials. The Map Collection at Arizona State University (ASU) has developed an online catalog from the original computer produced "comfiche" index through a conversion and downloading process carried out at the local level. ASU's Map Collection is available as one option on the ASU online catalog opening screen. The database represents over 150,000 sheet maps. Search access points are limited, but good access is provided by geographic location and subject, with some series notes.

GEODEX is a software application for local indexing.[6] The name of the software is derived from GEOgraphic InDEX System for Map Series. It provides analytical capabilities for large map series in order to provide rapid geographic searching of the holdings. It has the following capabilities: (a) rapid input of sheet level records; (b) geographic searching by point or area and string searches for sheet names or numbers; (c) display of brief series-level records, including call numbers; (d) printing, creation of subfiles, and backup of data files. Map libraries are beginning to cooperate in the use of GEODEX by sharing input responsibilities, and the resulting indexes.

Automated Reference Tools

Computerized outline maps and base map series offer the user the ability to manipulate information to build custom-made maps on the local microcomputer. In some ways, this is the "flashiest" new technology related to map librarianship.

PCGLOBE+ is one example of an electronically produced atlas.[7] Produced by Comwell Systems in Tempe, Arizona, this software provides detailed information on 177 countries and regions of the world. Some of the available information includes demographic data such as population, language groups, and health statistics; political information about leaders and parties; economic and trade data; travel information; and international communications information.

With PCGLOBE+, the user can select what he or she wants to see. Information on the screen can be immediately printed, or downloaded to a file. For example, a base map for the USA can be overlaid with information relating to major physical features, a selection of elevations, or major cities. Other parts of the database allow for the creation of bar graphs comparing data from the selected country to other countries in the region, or world. Comwell has recently released a second product, PCUSA, which provides the same sort of coverage of all 50 states and Puerto Rico.[8]

The company ARKEO offers a different sort of reference tool. PerfectArt is a set of outline maps and map symbols on 33 diskettes.[9] The advantage of this software is its compatibility with graphics features of WordPerfect 5.0. All of these outline maps can be imported into WordPerfect 5.0, and manipulated, that is, scaled, rotated, boxed, typed over, and moved around the page as any WordPerfect graphic. It is strictly an outline series, however, with no overlay information. Choices include plain outline, bold outline, hatched, or solid reproduction of the selected region. Figure 5 displays the four print choices for Arizona.

Other reference products are becoming available in electronic format. Catalogs of CD-ROM products now regularly list map products. Some recent listings include GeoDisc USAtlas, Electromap World Atlas; and Electronic Map Cabinet.

U. S. government research agencies, like other scientific organizations, have amassed large collections of data; however, lack of an effective means of dissemination has prevented widespread data distribution. Many agencies are now exploring the use of CD-ROM technology and have recently released to the public several new products. One example with exciting possibilities for map librarians is Geophysics of North America on CD-ROM produced by the National Oceanic and Atmospheric Administration.[10] Topographic maps can be generated and geophysical data, including magnetic, gravity, earthquake seismology, thermal aspect, and stress data, can be overlaid on the base map according to the needs of the user.

The State of Arkansas has taken the bold step to publish its official state atlas in two formats: floppy disk or CD-ROM, both of them electronic, neither one printed.[11] That in itself is a strong indication of the coming of age of electronic map librarianship, and, of course, the proliferation of microcomputers throughout libraries today.

GIS is a new application for map librarians made possible by this widespread use of microcomputers. The 1990 US census will provide extensive access to this type of data storage and retrieval. TIGER is the government's acronym for "Topologically Integrated Geographic Encoding and Referencing." This is the Census Bureau's new digital map database that automates mapping and related geographic activities required to support census and survey programs of the Bureau. In simpler terms, it is a base map series of the United

States, down to the local level, which provides maps of showing infrastructure (roads, railroads); limited physical features such as rivers; statistical area boundaries; and political boundaries. To realize the full potential of TIGER, think of the options of overlaying upon these base maps any information gathered from the census, and you see the power of GIS. This power comes at great price, however. Supermap, one of the many applications software already published in anticipation of the availability of the census data, will cost up to $11,000 to cover all 4 regions of the US down to the county level.[12]

Though costly today, sophisticated Geographic Information Systems broaden the meaning of cartographic materials. One commentator challenges us to redefine our definition of just what a map is. He suggests that, in the past, a map was defined as "a graphical representation of a portion of the earth's surface. Now, I think of a map as a database describing relationships between entities in space. I don't care whether the relationships are stored as lines on paper or bits on a computer."[13] "Crossing Borders," the theme of the 1990 Annual Conference of the Arizona State Library Association, was particularly appropriate for the presentation of this paper, as map librarianship is crossing geographic borders electronically and revolutionizing cartographic reference service today.

NOTES

[1] GEOREF Online Database. 1785 to present. Updated Monthly.
Available from Dialog Information Services, Inc. Marketing Department, 3460 Hillview Avenue, Palo Alto, CA 94304. Telephone: (800) 3-DIALOG. Cost: $87/connect hour, $.40/full record typed. Also available from STN International, c/o Chemical Abstracts Service, P.O. Box 3012, Columbus, OH
43210. Telephone: (800) 848-6538. Cost: $87/connect hour, $.25/record
Typed.

[2] GPO Monthly Catalog Online Database. 1976 to present. Updated Monthly. Available from BRS Information Technologies, 1200 Route 7, Latham, NY 12110. Telephone: (518) 783-1161. Cost: $25/connect hour, $.06/full record typed. Also available from Dialog Information Services, Inc. Marketing
Department. 3460 Hillview Avenue, Palo Alto, CA 94304. Telephone: (800) 3-DIALOG. Cost: $35/connect hour.

[3] EPIC Online Database. Full database of the OCLC Online Union Catalog. Updated daily. Release date: January 1990. Available from OCLC Online Computer Library Center, Inc., 6565 Frantz Road, Dublin, OH 43017-0702. Telephone (614) 764-6000. Cost: (Estimated): $50 annual fee + $30/connect hour +$.25/record.

[4] GEOINDEX on Earth Sciences on Compact Disc. CD-ROM. Updated quarterly. Cost: $350/year. Available from: OCLC Online Computer Library Center, Inc., 6565 Frantz Road, Dublin OH 43017-0702. Telephone: (614) 764-6000.

[5] GPO on SilverPlatter. CD-ROM. 1976 to present. Updated bimonthly. Cost: $950/year. Available from: SilverPlatter Information, Inc., 37 Walnut St., Wellesley Hills, MA 02181. Telephone: (617) 239-0306.

[6] GEODEX (GEOgraphic InDEX System for Map Series). Indexing System. Version 1.0 1988. Diskette plus user manual. Available from Christopher Baruth, American Geographical Society Collection, Golda Meir Library, University of Wisconsin, P.O. Box 399, Milwaukee, WI 53201. Cost: $75.00.

[7] PCGLOBE+. Comwell Systems, Inc. 2100 South Rural Road, Tempe, AZ 85282. Telephone: (602) 894-6866. Diskette plus general instruction booklet. Cost: $69.95.

[8] PCUSA. Comwell Systems, Inc. 2100 South Rural Road, Tempe, AZ 85282. Telephone: (602) 894-6866. Diskette plus general instruction booklet. Cost: $69.95 .

[9] ARKEO PerfectArt. P.O. Box 5004, Riverside, CA 92517. Telephone: (714) 788-8081. Different editions include USA ($55), All World (except USA) ($200), and 8 regions ($65 each).

[10] Geophysics of North America. CD-ROM with access software on floppy diskettes. Cost: $580. Available from National Geophysical Data Center; NOAA, Code E/GC1, Dept. 720; 325 Broadway; Boulder, CO 80303-3328. Telephone (303) 497-6419.

[11] Atlas of Arkansas. Developed by Richard Smith, Dept. of Geography, University of Arkansas, Fayetteville, Arkansas. Available from the University of Arkansas Press, 201 Ozark, Fayetteville, AR 72701. Three versions available: CD-ROM, 5 1/4" diskette, 3 1/2" diskette. Cost: $99.00 plus shipping and handling. Library discount available.

[12] Supermap (a trademark of Space-Time Research Pty Ltd.) Distributed by Chadwyck-Healey, Inc. 1101 King Street, Alexandria, Virginia 22314. Telephone: (703) 683-4890.

[13] Donald Cooke, "TIGER and the 'Post-GIS' Era." GIS World:2:4 (July/August 1989), p. 40.

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NO CLAIM TO ORIG. U.S. GOVT. WORKS.

File  89:GEOREF - 1785-1989/SEP
         (Copr. American Geological Institute)

1610020   89-18480
  Mineral investigation of the Muleshoe Study Area, Cochise and Graham
counties, Arizona
  Schreiner, Russell A.
  U. S. Bur. Mines, Internat. Field Oper. Cent., Denver, CO, USA
  1988  24p.
  Report No.: MLS 43-88
  Subfile: B
  Doc Type: REPORT; MAP   Bibliographic Level: MONOGRAPHIC
  Languages: English
  Availability: U. S. Bur. Mines, United States
  illus., 2 tables; 1:62,500; econ. geol. map
  Latitude: N321500; N323000   Longitude: W1100730; W1102230
  Descriptors:  *Arizona ; economic geology ; mineral resources; maps;
 Cochise  County  Arizona  County;  Graham  County  Arizona  County;
 Southwestern U.S.; United States; possibilities; economic geology maps;
 Muleshoe Study Area; Cochise County Arizona; Graham County Arizona
  Section Headings: 26  (ECONOMIC GEOLOGY, GENERAL & MINING)
```

Figure 1: GEOREF Sample Citation

```
File  66:GPO MONTHLY CATALOG - JUL 1976 TO NOV 1989

1574004         I 19.81-32114-H 2-TF-024/prov.
   7.5 minute series (topographic), [Arizona].32114-H2-TF-024.Red Bluff
Mountain NW quadrangle, Arizona--Yuma Co. /.produced by the United States
Geological Survey
  Variant Title: Red Bluff Mountain NW quadrangle, Arizona--Yuma Co
  Corporate Source: Geological Survey (U.S.)
  Provisional ed. 1986. Reston, Va. : The Survey ; Denver, Colo. : For
sale by the Survey, [19--]-   maps :  col. ;  on sheets 69 x 56 cm.
  Publication Date(s): 1900-9999
  LCCN: gp 87015431
  Place of Publication: Virginia   GPO Item No.: 619-M-3
  Languages: English
  Document Type: Monograph; Bibliographies
  Relief shown by contours and spot heights. "Produced from original
manuscript drawings."  Compiled from aerial photographs taken 1982, field
checked 1983, map edited and printed 1986. Includes quadrangle location
map and index to adjoining quadrangles.
  Descriptors: Arizona-Maps, Topographic
```

Figure 2: GPO Monthly Catalog Online. Sample Citation

```
ID NUMBER: 478     SUB-ID NUMBER: 1      STATE: Arizona (FIPS 4)

          AUTHOR: Hinkle, M.E., and Ryan, G.S.
           TITLE: Mineral resource potential map of the Pusch Ridge
                  Wilderness Area, Arizona
       PUBLISHER: U.S. Geological Survey
            YEAR: 1982
          SERIES: Miscellaneous Field Studies Map MF-1356-B

          COUNTY: pima
        EMPHASIS: general, minerals
     BOUNDARY ID: 47801
           SCALE: 1:62500

     NORTH LATITUDE: 323000              SOUTH LATITUDE: 321900
     WEST LONGITUDE: 1110000             EAST LONGITUDE: 1103900
CENTER POINT LATITUDE: 322430     CENTER POINT LONGITUDE: 1204930
```

Figure 3: GEOINDEX on CD-ROM. Sample Citation

```
GPO (on SILVERPLATTER)

AN: 86008343
SU: I 19.42/4:84-4270
SU: I19424844270
AU: Cuff,-Melinda-K.
CA: Geological Survey (U.S.)
 United States. Bureau of Indian Affairs.
TI: Geohydrologic conditions in the Vekol Valley, Pinal and Maricopa
counties, Arizona-1983.
OT: Map showing geohydrologic conditions in the Vekol Valley, Pinal and
Maricopa counties, Arizona-1983.
SO: Tuscon, Ariz. : The Survey, 1984.
PY: 1984
PD: 1 map ; 77 x 51 cm. on sheet 88 x 102 cm., folded in envelope 31 x 24
cm
SE: U.S. Geological Survey water-resources investigations report ;
84-4270.
NT: Relief shown by contours and spot heights.
 Envelope title: Map showing geohydrologic conditions in the Vekol
Valley, Pinal and Maricopa counties, Arizona-1983.
 Includes text, 2 well logs, and 1 table.
 Includes index map and map showing area of report.
 Includes bibliography.
DE: Hydrogeology-.
 Water-supply-Arizona-Pinal-County.
 Water-supply-Arizona-Maricopa-County.
 Geology-Arizona-Pinal-County.
 Geology-Arizona-Maricopa-County.
PT: Map; Single-Map
OC: 13132135
UD: 8602
```

Figure 4: GPO On CD-ROM. Sample Citation

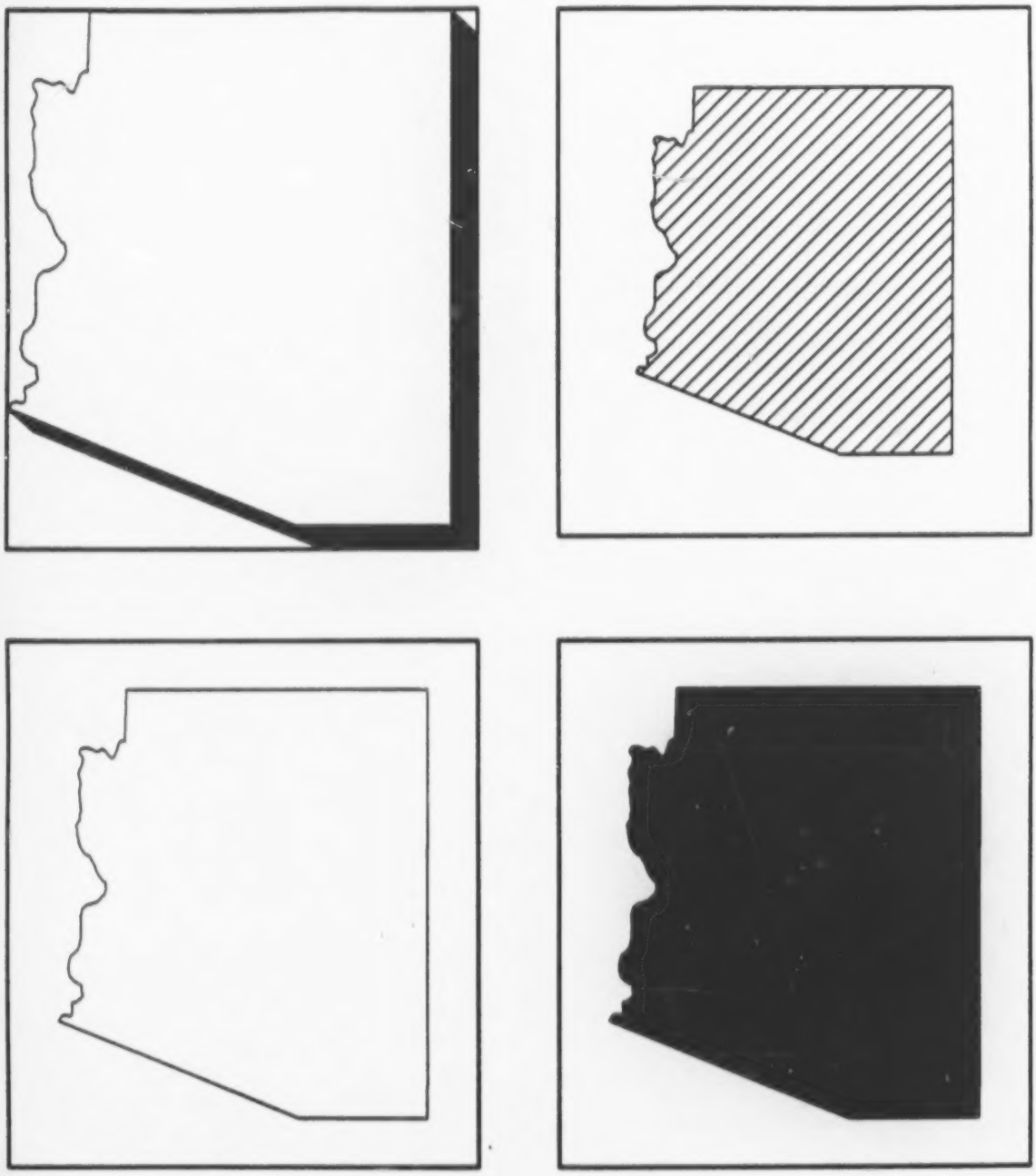

Figure 5: Examples from ARKEO PerfectArt

CROSSING BORDERS: FROM SLIP CATALOG TO OPAC

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Oxford University's Bodleian Library celebrated its 500th anniversary in 1988 by going online. Although one may marvel at the library's age, and may wonder why its going online is at all remarkable. The Library of Congress (a mere infant of less than 200 years) has had an online catalog for two decades now, and even the University of Arizona Library installed online public access catalogs last year in one of its libraries. Most libraries are going online--or are at least working toward that goal.

What is remarkable, however, is the Bodleian Library itself, one of the greatest research libraries of the western world, with a collection of more than five million books, 5,000 of these dating from the fifteenth century, and several million more maps, manuscripts, and other nonbook items. Its original building, Duke Humphrey's Library, still in use as a working part of the library, was completed in 1488. The collection itself dates from 1602, the year that Sir Thomas Bodley, a graduate of Merton College, refounded the Bodleian Library as a reference and research library for Oxford University. The earlier collection had been destroyed in mid-sixteenth century by the King's Commissioners after Henry VIII's break with the Catholic Church.

What would seem to American librarians, indoctrinated as we are with the necessity of cooperation, uniform cataloging standards, and networking with other libraries, even more remarkable than the size and age of the Bodleian is its half-millenium of insularity. In the course of the Bodleian's long history it chose to develop its own cataloging rules and standards, with little regard for what the rest of the library world might do. Thus, while other English and American libraries explored cooperation in cataloging with a series of Anglo-American codes beginning in 1908 and culminating some eighty years with AACR2 revised, the Bodleian stood aside, confident in its unique status, enveloped in the mystique that accompanies the serene and rarified atmosphere of higher learning that permeates Oxford University.

The first catalog of the Bodleian Library, a printed book catalog was issued in 1605. Five more book catalogs followed, until in 1860, overwhelmed by the enormous task of keeping a printed catalog up-to-date for one of the largest libraries in the world, sublibrarian Henry Coxe began what he called the "transcribed catalog," usually referred to as the "slip catalog." This consisted of several hundred large folio guard books in which were pasted, in approximate alphabetic order, slips of paper, one for each book in the library. Ample space was left between slips for later acquisitions; in addition, the slips were fastened in such a way that they could be moved if it became necessary.

In 1920, the huge folio slip catalog was closed and another folio slip catalog for books published after 1920 was started. Cataloging was done according to the Bodleian Library's own rules, the latest revision dating from 1939. Main entry, formulated by Bodleian rules, was normally under author. This entry was supplemented by references (not added entries) from editors and individuals involved in the intellectual content of the work. Since the catalog was based on the assumption that people knew what book they were looking for when they came to the library, no subject access was provided.

This was the situation until 1988, when online public access catalogs were introduced in the reading rooms of the Bodleian and AACR2, MARC format, and Library of Congress subject headings were adopted for the Bodleian Library's collections.

Actually, automation at the Bodleian Library had its start twenty years earlier, in 1965, when Dr. Robert Shackleton, soon to be Bodleian Librarian, went to the United States to investigate automation possibilities offered by the Library of Congress' 1965 Project MARC. The possibility of adapting MARC, at this time in an experiemental stage, to facilitate machine control of the Bodleian's collections was considered and abandoned as not being compatible with the library's unique cataloging rules. Nonetheless, in November 1966, the Librarian's report recommended machine control of the closed, pre-1920 Bodleian slip catalog of some 1.25 million books, with catalog entries going back as early as the seventeenth century. How could this best be done? The catalog needed much revision to bring all of the headings into uniformity. A team of catalogers was put to work to update the entries to the 1939 Bodleian cataloging rules, AACR1 having been considered and rejected as a possible standard.

The next year, in 1967, John W. Jolliffe, later the Bodleian Librarian, developed an automatic format recognition program based on optical character recognition. Jolliffe wanted to complete the retrospective conversion of the pre-1920 catalog in five years, but revision of the records was not finished until the 1980's. When revision was completed, the catalog entries were keyboarded for computer manipulation and a multivolume computer printout was produced. This is solely an author catalog, based on the 1939 rules, and does not offer subject access. There is little likelihood that this catalog will ever be a candidate for retrospective conversion. However, the guard book slip volumes that make up the catalog for 1920-1988 imprints, also cataloged by the 1939 rules, will eventually as time permits be converted.

In 1981, recognizing that Oxford was lagging behind other libraries in the Anglo-American scholarly community, the University's Libraries Board set up a working party on automation to see what might be done. As an experiment, catalogs of the libraries of the English and Modern Languages faculties and of Social Sciences were automated. Based on this experiment, after considerable soul searching, the decision was made to adopt cataloging practices and standards that would bring the library into uniformity with other scholarly libraries.

In December 1986 the university issued an operational requirement for a system large enough to accommodate the needs not only of the Bodleian and its dependent libraries but also of the forty Oxford College libraries. The total extent of the collections of the college libraries is difficult to calculate, because some of them are very secretive about their holdings, but they probably total another two million volumes. In mid-1987 DOBIS/LIBIS was selected as a vendor.

The next year and a half was spent preparing for the new system. Library buildings had to be rewired to accommodate increased electrical power requirements. Cataloging staff, many of whom had never used a typewriter, much less a computer, had to be trained to catalog at an online terminal. Finally, all the professional catalogers were given a ten-week crash course in AACR2, MARC tagging, and Library of Congress Subject Headings. The Bodleian Library, for the first time in its 500-year history, was about to offer subject access to its collections, and even more astonishing, it was going to use American headings.

On September 13, 1988, the Bodleian began online cataloging. As of June 1989 there were 50,000 records on the system, called OLIS (for Oxford Library System). Online catalogs are available in the main reading room; the system can be searched from anywhere in the university data network and eventually from anywhere in the world having access to the British Joint Academic Network (JANET), to which the Bodleian Library now belongs. The Bodleian

Library adheres to full AACR2R standards for its cataloging; it makes use of UK MARC tapes from 1985 to the present. If data is not found there, OCLC and two British databases (CURL and BLAISE) are searched; if a matching record is found in any of these sources, it is used. Authority control is based on the British Library Name Authority File.

At present, libraries contributing to the Bodleian's online catalog are the Bodleian and its dependent libraries, plus the Taylorian Institute. Three college libraries, Balliol, New College, and Nuffield, have also joined, adding their records to the union catalog beginning in June 1989.

The first library at Oxford University was already well begun when Columbus set off on his perilous voyage of discovery. Now, from Columbus to computers, from hand-written slips to online catalogs, in one gigantic leap the Bodleian Library has broken out of its isolation and has joined its strengths with those of other libraries in Great Britain and abroad. Both the Bodleian and the rest of the intellectual community stand to profit by its decision.

This paper has been accepted for publication in the April 1990 issue of Library Resources and Technical Services under the title "From Columbus to Computers: Automation at Oxford University's Bodleian Library."

EXPANDING THE BORDERS OF EDUCATED AMERICA: THE ROLE OF THE ACADEMIC LIBRARIAN IN RETENTION OF MINORITY STUDENTS

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Introduction

The demographics of the United States of America are changing. The African-American, Asian, Hispanic and Native American portions of the population are growing at a faster rate than the population as a whole. It is projected that by the year 2000 ethnic minority groups will make up at least 30% of the national population (Adams 1988) and in certain age groups (primarily the very young) and certain geographic regions these "minorities" will be a majority (Arizona Board of Regents 1989). At the same time, if present trends continue, the enrollment of minority students at U.S. colleges and universities will have declined. Between the years 1980-1984, overall minority student enrollment declined 8.5% (Adams 1988).

Arizona statistics mirror, to a certain extent, the national trends. The following are from the September 1989 report of the Arizona Board of Regents' Ad Hoc Committee on University Access and Retention (Arizona Board of Regents 1989):

More than 25% of the state's population is comprised of ethnic minorities. Of the 1988 college-age cohort (18-25 years), in Arizona, 22% are ethnic minorities.

In Fall 1988, Arizona universities enrolled more than 90,000 students, of whom only 11,304 or 12.5% were minority students.

Between 1980 and 1988, minority student enrollment in Arizona universities increased from 6,676 students in 1980 to 11,304 minority students in 1988. This is an encouraging growth - almost a doubling of minority enrollment - but we must look at how many of these students actually graduate. In 1980-1981 there were 1,192 (out of 6,676 enrolled) minority student graduates (a 17.8% graduation rate). In 1987-88, out of the 11,304 minority students enrolled there were 1,290 graduates (11.4%) -an increase of only 98 graduates systemwide and, in fact, a net decrease of 56% in graduation rates. A recent study by the Arizona Board of Regents found that for every 100 Asian students admitted to our universities, it is expected that 45 will graduate in 5 years; for every100 Hispanic students, 28; for African-American students, 22; for Native American students, 14. Compare these statistics to a graduation rate of 38 out of 100 for Anglo students. In the United States of America the emerging generation--the not-too-distant future work force of the nation--will be composed of the "ethnic majority." The above statistics, along with those showing the decreasing numbers of qualified persons for professional and technical positions in our economy (for example, engineers, college professors, etc. (Adams 1988), indicate the crucial nature of the need for an educated citizenry. The 1983 Report of the Task Force on Library and Information Services to Cultural Minorities for the National Commission on Libraries and Information Science points out "...the United States government must be certain that its minority populations receive quality education and are guaranteed access to library resources and information... The nation cannot afford to ignore the education, training, and library needs of its minorities" (NCLIS 1983).

In a recent study, it was shown that the use of the academic library for study and/or research and the number of hours spent there were both positively related to retention of university students in general and for black students in particular (Mallinckrodt 1987). As academic librarians we can, and should, be a part of our institutions' efforts to retain minority students. This paper will describe several programs for undergraduates in academic libraries that have been designed with the goal of contributing towards that end.

Case Studies

The Reference Assistance Project (RAP) at the University of Wisconsin-Parkside was initiated in 1981 with the purpose, first, of improving the success rate of minority students in satisfying the library component of the University's Collegiate Skills Program and secondly (or ultimately) to increase the retention rate of minority students at the university. (Piele and Yamel 1982). In this program minority students who had satisfied their collegiate skills competency requirement were recruited and trained to serve at the reference desk, providing assistance specifically with the Basic Skills Workbook, but in addition, providing directional assistance and referrals to librarians for more in-depth reference questions. The student assistants took an active approach in seeking out students who seemed to need assistance. In evaluating the program it was felt that it had in fact achieved it's immediate goal of providing library support for minority students in the Collegiate Skills Program. In addition to the direct benefits however, there were other benefits. They included providing positive role models for incoming minority students and helping to reduce any reluctance minority students might feel in approaching reference desks staffed primarily by non-minority personnel. The RAP student assistants themselves indicated that the program gave them increased confidence in using the library and relating to others, both students and library staff. The Reference Assistance Project was first funded with a small grant from a faculty development program on campus. After the initial year, however, the University, "recognizing the potential of RAP to help realize the goal of improving minority students effectiveness in the academic setting," provided funding to continue the program indefinitely.

A similar program was begun at the University of Michigan Undergraduate Library in 1985 (MacAdam and Nichols 1989). The Peer Information Counseling Program was begun in support of the University's commitment to improve minority undergraduate retention. This program, unlike the one just described, does not focus on providing assistance for the basic freshman library skills program. Minority students (juniors or seniors) are hired to serve at the reference desk providing directional and some limited reference assistance, to participate in the term paper assistance service, and also to teach information-handling and microcomputer skills for word processing in the Academic Resource Center, a small microcomputer learning center. The student assistants also speak to outside groups such as dormitory Minority Peer Advisors, the Black Business Students Association, and the NAACP campus chapter, promoting the services of the library's Peer Information Counseling program. As with the University of Wisconsin program, the PIC service has been assessed as being beneficial to minority students, to students in general, and to the students employed as peer counselors.

At the University of Arizona steps are being taken to show a similar support on the part of the library for minority students. In the proposal stage is a Library Undergraduate Minority Internship Program. When funded, this program would provide jobs for minority students, not just in the reference department, but in all library departments. The students would gain work experience but also would be given specialized training in library research skills that would help them with their coursework. They would be provided with information on all aspects of librarianship and library career opportunities, as one of the goals of this proposed program would be to increase the number of minorities available for recruitment to professional and career staff positions in libraries. Additional benefits of this program would be similar to

those found at the above-mentioned institutions: the undergraduate student interns would serve as role models for other minority students on campus and help create an environment where those students would feel comfortable in relating to a ethnically diverse library staff.

Conclusion

Addressing the problem of retention of students, and minority students in particular, will require a commitment to provide aggressive and creative services for that purpose. As demonstrated by the programs just described, libraries and librarians, can be an important part of the larger campus-wide effort. We can help expand the borders of educated America.

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FROM EQUAL OPPORTUNITY TO AFFIRMATIVE ACTION: CHANGING HIRING PRACTICES AT THE UNIVERSITY OF ARIZONA LIBRARY

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The goal of Equal Opportunity is that people are hired without respect to race, creed, color, sex, age, or veteran status. However, Equal Opportunity employers often interview on the basis of Equal Opportunity, but hire the person who exceeds the job requirements by the greatest margin. This has often perpetuated the inequities of the past by favoring the hiring and promotion of white males at the expense of minority applicants and women who also meet the job qualifications.

Affirmative Action begins where Equal Opportunity leaves off. Its goal is to ensure that qualified minorities and women are hired and promoted in proportion to their numbers in the job market. Accomplishing that goal means that the employer must accumulate statistics on the available workforce. Numerical goals must be established to ensure that the hiring and promotion of women and minorities is done in proportion to the numbers available. Job openings must be advertised in a way that will encourage qualified minorities and women to apply. Job interviews must be conducted with sensitivity for the concerns of those applicants. Follow-up must be done to measure the organization's progress toward its goal. Finally, appropriate incentives must be provided for women and minorities to remain with the organization, including viable opportunities for promotion.

The University of Arizona Library has promoted the concept of affirmative action for several years. However, by 1987 women and minorities were still being underutilized in proportion to their availability. The Library could not precisely measure the extent of this problem because it did not have statistics showing the percentage of affirmative action employees within the library, or the percentage available in the outside workforce.

In 1987 the University's overall affirmative action plan was developed, and the library organized an Affirmative Action Committee to develop an affirmative action plan specifically for the library. This plan was implemented during the 1988/1989 academic year. In this paper we will explain how the library made the transition from Equal Opportunity to Affirmative Action, pointing out some of the problems encountered, how the library is dealing with them, what progress has been made to this point, and what remains to be done.

In 1987 the University's Affirmative Action Office encouraged colleges and departments to develop their own affirmative action plans. The affirmative action officer worked with the library from an early point, recognizing the library's interest. The library's Affirmative Action Committee was charged with creating a plan for the library. First the committee studied the university's plan; then the committee worked with the University's Affirmative Action Office to develop additional guidelines. That office also provided a snapshot indicating the name, sex, ethnicity and job level of each library employee.

Several steps were taken to encourage staff acceptance. Initially, the library Affirmative Action Committee noted some concerns and scheduled a meeting for all library staff in which the university affirmative action officer and a member of the library administration addressed these concerns. The meeting was videotaped for those who could not attend and is available for viewing by new members of the library staff. A library display on affirmative action was also exhibited during this period. Although the display was created mainly for library users, it also helped increase the staff's awareness of affirmative action issues.

In order to effectively use the plan in hiring professional librarians the Affirmative Action Committee created several supporting documents. These were developed to address the need to educate members of search committees appointed for each professional vacancy, and to obtain statistics from these committees when the searches were completed. One document was a set of guidelines for writing library job announcements. These guidelines include examples of wording to use and to avoid in order to encourage affirmative action candidates to apply. For example, consider asking for library experience rather than academic library experience. Another document is a script to explain to a search committee, at its first meeting, its responsibility in regard to affirmative action.

The committee also developed a form to tabulate affirmative action diversity statistics of the candidate pool for each vacant position. It is completed by the chair of each search committee. The information for this form is obtained mostly from a voluntary affirmative action reply form that the library encourages applicants to complete. The search committee chair uses the information on the voluntary form to categorize candidates by sex, age and ethnicity. The committee chair shares this information with the committee members before the candidate pool is narrowed. The remainder of the report form gives the sex and ethnicity of the candidates interviewed, and of the candidate hired. After completing this part of the form the chair sends it to the library's Affirmative Action committee. Over time, these forms provide a means of monitoring the library's success in attracting appropriate candidates and making the final selections.

In May of 1988 the library administration issued guidelines for achieving affirmative action goals in library classified staff positions. These guidelines specify that "If minority candidates who meet the posted University Approved Minimum Qualifications and the Departmental Preferred Qualifications are judged to be able to be successful in the position with a reasonable amount of training, the most qualified minority will be recommended for hire." This is the program. What have the results been?

Modest gains have been realized in the hiring of faculty librarians who are women. From February to October 1989 the number of female librarians has grown by four percent, increasing their representation to 57.5 percent. Our goal is to attain the Association for Research Libraries statistic of 63.6 percent female.

The library now has seven minority librarians, compared to six when the plan was implemented. In spite of this gain the percentage of minority professionals has not changed.

This is due to a fluctuation in the number of temporaries hired during this period. Our goal is to increase the number of minority librarians from the current 8.75 percent to reflect the Association for Research Libraries statistic of 10.8 percent.

An interesting development in the hiring of professionals has been a commitment by the university to "find" positions for spouses of underutilized ethnic groups and women who have been offered professional positions. For example, the recent hiring of an hispanic librarian resulted in the creation of an additional permanent position to accommodate the candidate's spouse who also happened to be a librarian.

Since issuing the plan a little over a year ago the library has increased its percentage of minority classified staff from 17.6 percent to 22.3 percent by rigorously applying affirmative action guidelines in initial hires and promotions. By hiring seven more minority staff the library will reach the percentage of available minority workers in the city of Tucson, 26.5 percent.

Despite our initial success in implementing an aggressive affirmative action plan we have found that staff acceptance remains a concern. The library remains the sole unit on campus which bases its hiring exclusively on affirmative action guidelines rather than equal opportunity. We therefore serve as both role model and guinea pig, and often find ourselves breaking new ground. In many cases the impact of affirmative action is not felt by career staff until they are in the process of applying for a promotion. It is not easy for a highly experienced non- affirmative action candidate to understand why he or she was passed up for promotion because a less-experienced but qualified minority candidate was available. Because of this, affirmative action guidelines need to be reviewed frequently and openly with the library staff in order to provide an opportunity for staff to ask questions and receive answers.

Affirmative action guidelines are a less than perfect way to address past inequities, but we recognize that such methods are the only ones which have worked. For years the University of Arizona Library discussed affirmative action issues, stayed current with affirmative action developments on campus, and in essence encouraged the hiring, promotion and retention of persons from underutilized groups. These efforts failed to produce the desired results. Only by setting numeric goals and implementing hiring guidelines based on an active affirmative action stand that goes beyond a passive equal opportunity doctrine have we been able to cross the border from inequity to equity.

GOING OFFLINE (Sort of): THE IMPACT AND IMPLICATIONS OF CD-ROM AND PAC DATABASES AS ONLINE ALTERNATIVES

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INTRODUCTION

Patrons have a greater range of options for access to information in libraries than ever before. Aside from the traditional printed tools,many libraries are now offering access to databases through commercial timesharing search services, CD-ROM or other optical media, and locally loaded databases in an institutional minicomputer or mainframe.[1] Such a range of options have had significant impact on reference, bibliographic instruction, levels of traditional fee-based searching through commercial venders, and how patrons are approaching the use of the library.[2] Arizona State University (ASU), Tempe Arizona, has been offering a mix of all of the above options. Since 1975, the Arizona State University Libraries have conducted intermediary searches of the major online vendors. In the spring of 1988, CD-ROM's were introduced. In addition to the fee-based intermediary searching, patrons have access to ERIC, PsycLIT, MLA Bibliography, ABI/INFORM, Dissertation Abstracts, CASSIS (patents), Periodical Abstracts, CIRR, NewsBank, InfoTrac (discontinued 1989), General Science Index (discontinued when loaded in the Online Catalog), Applied Science & Technology Index (discontinued when loaded in the Online Catalog) and Medline on CD-ROM. During 1988 and 1989 seventeen databases have been made available in the University Libraries' Online Catalog beyond the General Catalog (the Libraries's electronic card catalog of MARC records). These have included six H.W. Wilson periodical indexes, indexes to some of the Libraries' special collections, a gateway to UnCover (a table of contents indexing service for 10,000 journals), a full-text encyclopedia and several databases for a Career Services department on campus.

With such a multiplicity of searching options for patrons, management information is important to analyze the available services for cost effectiveness and to determine the shifting role of reference librarians. Beyond statistics gathered for monitoring shifting use patterns of databases, a survey was developed to examine user awareness, patron attitudes, behavior, perceived needs, and satisfaction with current services. A questionnaire was first used during the summer semester 1989 to begin to collect data to measure what are some of the critical issues of the ASU libraries. (See Appendix) The crucial questions addressed are:

1. Do patrons have database preferences?

2. Are patrons aware of their options? How do patrons find out about these options/databases?

3. Are there factors, other than finding information, that influences a patron's choice of databases, such as convenience of printing results, costs?

4. What other databases, or types of databases, would patrons like to have on the online catalog?

5. How easy are the databases to use?

In addition to the user surveys, system use data are monitored and reported (See Table I). These data indicate how many times each database on the public access catalog is accessed, and which databases are being used the most. For example, during the fall of 1989, the ASU General Catalog was used over half of the time, with all other use being split among the other databases, leading to the conclusion that many patrons are not aware that other databases exist on the online catalog terminals.

METHODOLOGY

Four types of data were collected for this study and will continue to be collected during the next academic semester. Since online services began in 1975, routine statistics have been kept on fee-based searches. These statistics contained such information as patron status and affiliation, databases searched, search topic, and search costs. Data for CD-ROM use is based upon sign-in sheets that request patron information and CD-ROM database(s) searched. Data were also collected automatically from the online system. Database opens were counted by day and by terminal. Finally, data concerning database use patterns and patron perceptions and attitudes were collected and will continue to be collected, through a survey administered at PAC terminals throughout the library system (See Appendix).

FEE-BASED ONLINE SEARCHING

During fiscal year 1988/1989 the ASU reference librarians provided online searching on a fee basis for 639 online searches, the largest number of requests coming from graduate students, closely followed by faculty (See Table II). Overall, during the academic year 1988/1989, online searching decreased by 48% from 1987/1988, which marked the introduction of CD-ROM's. There appears to be a direct correlation between the drop in fee-based search with the introduction of CD-ROMs and databases in the Online Catalog.

CD-ROM

During the 1988/1989 academic year, library patrons had access to a number of CD-ROM products: Infotrac, MLA Bibliography, NewsBank, two Wilsondisc products, the General Science Index and the Applied Science & Technology Index, and three Silver Platter databases, ERIC, PsycLIT, and Medline. The two Wilsondisc products were discontinued when these databases were then loaded on the online catalog in the spring of 1989. In general, the CD-ROM products purchased represent most of the highly used online databases, ERIC, PsycLIT, and Medline. The overall effect of these products has been to decrease the number of mediated fee-based online searches, but to provide many more searches to library patrons who do their own searches at the CD-ROM workstations. End-users conducted approximately 500 ERIC searches, 840 PsycLIT, and over 1000 Medline searches during this academic year.

ONLINE PUBLIC ACCESS CATALOG

Since 1983, Arizona State University has had a Tandem-based integrated library system. In the early 1980's the ALIS III system was acquired from Dataphase, Inc and successfully operated for 3 years. When that system was sold to Utlas in 1986 (and renamed Utlas T/Series 50), ASU began to look at other systems which operated on the Tandem hardware which the ALIS III software used. After some investigation and comparisons, the university decided to switch to the CARL integrated library system which was developed by the Colorado Alliance of Research Libraries (CARL). This migration occurred during the summer of 1987 and by August, the new system was operational. The CARL software was developed in a consortia environment in Colorado and has a number of nice features:

1. It supports multiple libraries as well as many types of "foreign" databases including periodical indexes, full text, non-bibliographic files, etc.

2. It allowed ASU to run twice as many terminals with the same number of CPUs as compared with the Utlas T/Series 50 software.

3. The software provided good connectivity and has been interfaced with the ASU campus broadband and supports dial-in access.

4. A menu and command driven user interface supports both the novice and experienced patron. These and other features make the CARL software an excellent platform for an integrated online library system with many opportunities for networking and loading multiple databases.

ASU SYSTEM CONFIGURATION

As of fall 1989, the ASU Online Catalog has the following system configuration:

1. Four Tandem Non-Stop II Central Processing Units (CPUs), and one TXP CPU.

2. 264 ports of which 20 are allocated for connection to the campus broadband (through which dial-up is possible plus use from faculty offices and remote computing sites on campus).

3. Two 9600 baud leased lines: one to link the ASU Online Catalog with the CARL system in Denver, Colorado, and a second to provide Online Catalog service to ASU West, a branch campus located 35 miles away from the main ASU campus in Tempe. The Denver leased line is used for software updates and can be used by the public as a gateway to the Uncover database being produced by CARL (UnCover is a table of contents indexing service which indexes 10,000 periodical titles).

4. Over 14 gigabytes of Winchester hard disk storage.

DATABASES CURRENTLY LOADED AT ASU

One of the major reasons that ASU selected the CARL software was that it supported the loading of multiple databases. This allows users to search not only the MARC cataloged materials in the collection but also other databases on the same terminal with the same search software without having to change computer systems or learn new search protocols. The software supports a simple transferring of searches from one database to another so users can easily move around the system. The patron is presented with a simple menu screen and can easily select from any database. Another advantage of locally loaded databases in a minicomputer environment is that many users can access a database at the same time. This helps avoid the CD-ROM dilemma in which only one user (or a small number if networked) can use a database at a time. As of fall 1989 the databases which are available to the public include the following:

1. ASU General Catalog - the MARC cataloged books, serials, etc. in the collection. Approximately 1.3 million full MARC records are in this database and is growing as the retrospective conversion of the collection finishes.

2. Six H.W. Wilson periodical indexes have been loaded: Humanities Index, Applied Science & Technology Index, Social Sciences Index, General Science Index, Education Index, and Business Periodicals Index.

3. The Song Index - this database is locally produced by the ASU Music Library and indexes collected works of sheet music. Each citation includes the composer, librettist, title of the song, first line of the song, and the title and call number of the collected work from which it came.

4. Academic American Encyclopedia - this is the first full text database on the system and has proved especially popular among the remote users.

5. The Career Services Databases - three databases are produced by the Career Services department at ASU (this department helps students find jobs upon graduation). Their files include a Company Index which lists companies which interview on campus; a Calendar which lists workshops, orientations, and seminars provided by this department; and the list of Books in their own departmental library.

6. UnCover - this database is not stored locally but is available via a transparent gateway with the CARL system located in Denver, Colorado. The database provides access to title level information on approximately 10,000 journals. The database can be searched using keywords or a user can recreate a table of contents for a specific issue of a periodical.

7. The Solar Energy Index is a file devoted to the internationally famous Solar Energy Collection located at the Noble Science & Engineering Library at ASU.

8. The Map Index provides in-depth access to over 160,000 maps in the ASU Map Collection.

A number of other files are in development which are targeted for public release in 1990.[3]

STATISTICAL SUMMARY OF DATABASE USE IN THE ONLINE CATALOG

Since the public release of databases in ASU's Online Catalog, statistics have been gathered on their use. One of the difficulties in gathering these statistics in the present ASU environment is that the number of databases which have been added over the last year has averaged more than one per month. This has meant that every time a new database has been added, a different mix of patron use is spread across the files. Thus it has been difficult to compare statistics over an extended period because the number of files available is constantly changing. The numbers contained in Table I represent a one week collection of data for files available in November 1989 during the fall semester at ASU. They provide a count of the number of "opens" that a file receives on an average fall semester day. This represents how many times a particular database was selected from the PAC menu screen on a given day with no measure of how long the patron spent in searching the file.

Although the percentages in the use of files other than the ASU General Catalog appear small, it is important to look at the actual numbers. For example, on an average fall day the 6 H.W. Wilson files are opened more than 2100 times. If an average cost for such a search were $10 through Wilsonline, this would represent over $21,000 worth of searching on one day.

For a several month period in mid-1989 the library had concurrent subscriptions to two H.W. Wilson indexes in two formats CD-ROM and magnetic tapes that were loaded in the Online Catalog (General Science Index and Applied Science & Technology Index). It was discovered through comparing statistics from June 1989 that the same number of searches done on one of these files on a CD-ROM in one month equals the number of searches done on these same files in one day in the Online Catalog!

One factor which may skew heavy searching in the ASU General Catalog is the fact that this database is presented as the first choice on the menu screen and to see alternative databases a patron must choose a secondary menu which displays all of the options. Many staff feel that patrons may not be aware that other databases exist in the system and do not have the curiosity or knowledge to explore in this online environment. Although the survey tends to indicate a high level of familiarity with other databases in the system, it has been surmised than a self weeding is going on with who fills out the survey. In other words, those familiar with the alternative databases in the Online Catalog complete the survey.

CD-ROM USE VERSUS FEE-BASED ONLINE

There is a dramatic decline in online searching over a seven year period, from over 1500 online searches in 1982/1983 to just over 600 in 1988/89 (See Table II). The figures for the academic year 1988/1989 represent only a small percent of the online searches conducted seven years ago. The breakdown in user groups remained consistent over the seven year period,with graduate students being the largest user group, followed by faculty/staff, and undergraduates being the smallest. The breakdown by databases remained rather consistent, until the introduction of CD-ROM's.

At ASU the number of mediated online Medline searches declined 62% during the 1988/1989 academic year, after introducing the SilverPlatter Medline CD-ROM. At the same time, over 1000 Medline CD-ROM searches were conducted by patrons themselves, providing more Medline searches than have ever been provided by an intermediary. In general, at ASU CD-ROM is replacing online, unlike some reports in the literature that they are companion products.[4] Patrons can search CD-ROM's without paying a fee as they would for an

intermediary online search. In addition, some of the CD-ROM's, like SilverPlatter's Medline, are now being updated monthly, eliminating the need for online updates. For most academic users this currency is more than adequate.

DATABASES ON THE ONLINE CATALOG USER SURVEY

This survey represents a first effort to investigate user patterns in regard to one area of ASU's mixed information environment, the non-book databases loaded on the Online Catalog. The survey looks at database selection and use, instructional issues, and patron expectations and attitudes toward such key issues as the need for such databases and printers on the online system.

The survey was conducted throughout the month of July 1989, and will be continued during August, September, and October. Forms were placed next to PAC terminals throughout the library system and routinely collected,
tabulated, and analyzed.

CONCLUSION

Until only recently academic libraries were limited in their online provision of bibliographic information. Fee-based services were popular but inherently restricted by the relatively high cost of searching, the hidden costs of maintaining staffs competently trained in a quickly changing technology, and the need for the intermediary to approximate the knowledge of the person seeking information--always an awkward and nearly impossible task.

The development of CD-ROM and locally-loaded commercial and local databases has radically altered how academic libraries can approach providing online information to patrons. The purchase or lease of CD-ROM databases and database tapes returns the library to the familiar world of fixed price and equitable distribution and access to information.

This world may be more familiar but it is definitely not the same. Electronic access is very powerful and provides the patron with more effective, convenient, and timely approaches to his or her information needs. At the same time, however, these new electronic tools are may be perceived as more complicated to understand and use. Moreover they require librarians to rethink traditional notions of how to organize reference and provided improved user services.

For example, after years of supporting an online search service at ASU, librarians are now facing a radical reduction in service activity. Reference librarians are no longer being required to do as much searching; as a result, skills atrophy and the benefits of maintaining a highly trained staff dwindle. Moreover, end-user searching necessitates considerably more attention be paid to instructing patrons in information retrieval concepts and techniques--an expertise once practiced only by the online searcher. Job descriptions need to be changed to meet these new demands.

More questions press for answers. The survey and experience show that user expectations in academic libraries are high; they want the information they need in the most convenient and cheap form available. Electronic access provides the information and the convenience; it can also be made cheap for the patron but requires additional costs for libraries as more and more products in alternate formats become available.

NOTES

[1] The June 1989 issue of Information Technology and Libraries is a special issue on locally loaded databases in online library systems.

[2] Brunning, Dennis, George Machovec and Joyce Plaza. "Searching Under Multiple Options: Impact and Issues of Alternatives to Online Databases. Proceedings of the 10th National Online Meeting, New York, May 9-11, 1989, p.75-82.

[3] Machovec, George. "Locally Loaded Databases in Arizona State University's Online Catalog Using the CARL System," Information Technology and Libraries 8(2)161-171 (June 1989).

[4] "Speak Out: Has CD-ROM become a companion product for online searching or do they remain two separate entities?" Information Today, May 1989, p.32-33.

TABLE I
NUMBER OF OPENS PER DATABASE PER DAY
AVERAGE FALL SEMESTER DAY 1989

	Number of Opens	Percent
ASU General Catalog	5159	58.6%
News & Help	166	1.8%
Encyclopedia	435	4.9%
Song Index	52	0.6%
ASU Newspaper Index	122	1.3%
Career Services: Company	99	1.1%
Career Services: Calendar	27	0.3%
Career Services: Books	103	1.1%
Humanities Index	287	3.2%
Applied Science & Technology	365	4.1%
Social Sciences Index	597	6.8%
General Sciences Index	329	3.7%
Education Index	216	2.5%
Business Periodicals Index	326	3.7%
UnCover	425	4.8%
Map Index	48	0.5%
Solar Energy Index	33	0.4%
TOTAL OPENS PER DAY	8789	

TABLE II
NUMBER OF FEE BASED SEARCHES
ASU LIBRARIES

	82/83	83/84	84/85	85/86	86/87	87/88	88/89
Grad	1049	809	969	903	827	650	323
Faculty	401	441	525	551	577	501	277
Undergrad	111	149	179	93	77	52	36
Total	1561	1369	1400	1547	1481	1203	636

APPENDIX

SELECTED SURVEY RESULTS
DATABASES IN THE ONLINE CATALOG USER SURVEY

1. Academic status of those completing the survey

Faculty/Staff	14.6%
Graduate Student	40.0%
Undergraduate	30.0%
Off-campus	15.4%

2. Computer literacy

I own a microcomputer	57%
I use a computer on the job or for research	67%
I have experience with computers for information retrieval	50%
I am not very familiar with computers	10%

3. Use of online databases in the library

I have used databases in the Online Catalog other than for finding books	84%
I have had a librarian do a fee-based online search	16%
I have used the CD-ROM databases in the library	32%
I am not familiar with online databases in the library	4%

4. How did patrons learn about the databases in the Online Catalog

From a reference librarian	15%
From other staff in the library	10%
From non-library person (friend, teacher, etc)	15%
By myself while using the Online Catalog	60%

5. How easy did you find the Online Catalog non-book databases to use?

Very easy	46%
Moderately easy	42%
Somewhat difficult	12%
Very difficult	0%

6. Instruction Assistance for the Online Catalog

More written instructions at each terminal	18%
More online help screens	23%
More personal assistance from staff	5%
More workshops conducted by librarians	8%
Other	8%
No additional help needed	38%

7. Non-book databases provided essential library services and should be expanded when possible.

Highly agree	75%
Agree	23%
Disagree	1%
Highly disagree	1%

8. What additional databases would you like to access in the Online Catalog?

Dictionary	47%
Thesaurus (e.g Roget's)	40%
Full text of journal articles	43%
Full text of books	20%
Statistical datasets	26%
Factual reference works (e.g. Almanac)	35%
More in-depth journal indexing services	52%
Periodical/serials holdings list	62%

9. Printing from the Online Catalog

Very important	38%
Important	27%
Somewhat important	23%
Not important	2%

10. How much would you be willing to pay per page for printouts?

10 cents	55%
15 cents	10%
20 cents	2%
more than 20 cents	0%
would not pay	33%

HOMAGE TO MELVIL DEWEY: THE ROLE OF LIBRARY STANDARDS IN ARCHIVAL DESCRIPTION

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The concept of library standards has been associated with a desire to share information about holdings and to make that information available to researchers in a consistent and predictable fashion at institutions across the country. An additional goal of standardization has been to provide similar descriptions of materials to patrons regardless of format.[1] Unified access is becoming a reality at many of our libraries and research institutions as descriptions of materials in many formats are presented to researchers through online public access catalogs and bibliographic utilities. Inclusion of archival and manuscript records in these systems has theoretically increased their availability to patrons,[2] but the similar appearance of catalog records for books and manuscripts belies the very different philosophies and processes used in the production of those records. Library standards have been used by librarians and archivists to describe their materials, but these standards were not intended to accommodate the idiosyncrasies of unpublished materials.

Since separate standards for description or data exchange were not developed by the archival community as unified catalogs were being created, archivists chose to work with library standards in order to participate in these systems.[3] They have thus far concentrated their efforts upon modification of AACR2 for use with archival materials[4] and implementation of the MARC Archival and Manuscripts Control format (MARC AMC).

Descriptive standards for archives and manuscripts had been written by the Descriptive Cataloging Division of the Library of Congress as early as 1954. That effort and the revisions presented in AACRI and AACRII were inadequate in the eyes of many archivists.[5] These standards did not address the substantive differences that exist between manuscript materials and published items. The most outstanding of these differences concerns the collective value of groups of manuscripts.

Books are designed to be discrete units. They are assemblages of information compiled for a specific purpose and assigned a collective title by their author. However, maintenance of archival collections is the essence of an archivist's work. Archival collections can contain thousands of individual documents, each created under unique circumstances and applied to specific tasks. Although item-level cataloging of archival materials has been performed at many institutions and is perhaps more amenable to library descriptive standards than collection-level cataloging, most archivists have recognized the futility of cataloging each and every document in their possession. In addition, archivists believe that items within archival collections are best understood in relation to other items or groups of items in the collection. Historical documents can be most effectively interpreted within the context of other documentation in a collection.[6] Therefore, archivists have chosen to provide descriptions of archival collections within library catalogs and to utilize other access tools such as inventories and finding aids for more detailed access.

The decision to describe archival collections brings with it a number of issues not generally confronted by catalogers of published items. For example, the relationship between the title of an archival collection and its statement of responsibility is often quite different from that found in published materials. The title of an archival collection often includes the names of individuals or corporate entities that hold responsibility for thecollection, either as creator or as collector. The nature of that responsibility is usually established from research within the collection and is rarely expressly stated in the material. Other issues such as form of material and assignment of inclusive dates require analysis of the content of archival collections and definitions of formats not found in published works. In short, archival description is based upon a relatively subjective analysis of the content of a group of hetero-geneous materials rather than transcription from a title page. Because of the nature of archival materials descriptive standards amenable to collections had to be devised in order to bring consistency to archival descriptions and to insure compatibility with library systems.

Because of the perceived failure of Chapter Four of AACR2 to provide acceptable descriptive standards archivists began to investigate the development of new archival descriptive standards amenable to library cataloging practice.[7] This effort came to fruition in 1983 when Steven Hensen, then of the Manuscript Division of the Library of Congress, published Archives, Personal Papers and Manuscripts (APPM). APPM is a cataloging manual designed to be "faithful to archival principles while remaining within the general approach and structure of...AACR2." [8] This work is essentially an interpretation of AACR2 that has become the standard cataloging manual for archivists. Although APPM provides rules for cataloging at the item, series or subgroup level, its most important contribution is in recommending description of archival materials at the collection level and in identifying the finding aid prepared for the materials as the chief source of information.[9] Using APPM, information required by AACR2 can be isolated and presented within the structure of the MARC AMC format, and can therefore be displayed within the same automated systems as books and other published materials. However, implementation of the MARC AMC format itself presents a new series of challenges to archivists seeking to participate in librar systems.

Because the MARC formats are not fully supported by bibliographic utilities, archivists have had to be satisfied with limited access to their collection level descriptions.[10] Large and diverse collections often demand a great quantity of added entries to provide adequate access to their contents. It is not uncommon for a manuscript collection of twenty linear feet to require more than one hundred name and subject added entries. Restrictions on record length and the number of fields per tag group limit the quantity of access points applied to archival collections described in bibliographic utilities.

In addition, some local systems have more sophisticated subject search capabilities and less severe record length restrictions than bibliographic utilities. When records are transferred from the utilities to local systems the restrictions of the utility can impede full implementation of the capabilities of the local system. For example, the Colorado Alliance of Research Libraries Public Access Catalog (CARLPAC) at the Arizona State University Libraries indexes the 520 field for "word" searches. Record length restrictions in the CARLPAC are known to greatly exceed those of OCLC. However, OCLC tapes are used to load record into the CARLPAC. Therefore, the length of the Scope and Content Note entered into the 520 field must adhere to OCLC restrictions or the record must be manually enhanced once it has been loaded into the CARLPAC.[11]

Development of library systems shared by archivists and librarians has resulted in greater interaction between members of the two professions. Since bibliographic utilities and online public access catalogs appear to be the most common form of automated access available to archivists, training in librarianship continues to be a valuable asset to archivists working in

automated environments. In 1988 the Society of American Archivists (SAA) developed a workshop program entitled "Library Standards for Archival Description" to train archivists in the use of AACR2, APPM and Library of Congress Subject Headings.[12] These workshops have been held in a number of cities around the country and are expected to continue for the forseeable future.

There has also been a great deal of cooperative activity between librarians and archivists in the development of archival descriptive standards in the last two years. Non-voting liasons from SAA now meet with the Committee on Representation in Machine Readable Form of Bibliographic Information (MARBI) and the Committee on Cataloging: Description and Access of the American Library Association.[13] In 1988 SAA also established a task force on Archival Standards, and more specifically a working group on Standards for Archival Description. The working group presented a series of sixteen recommendations at the 1989 SAA Annual Meeting at St. Louis. They included establishment of a standards board and creation of a full-time staff position devoted to coordinating the development, monitoring and implementation of descriptive standards. The SAA Council has already approved Recommendation Nine of the working group, which calls for SAA endorsement of APPM as a standard for archival descriptive cataloging and establishment of a formal process for continuing review and revision.[14] Steven Hensen and Marion Matters have just finished collaborating on the second edition of APPM, which was published by SAA in December, 1989.

It is evident that archivists have not abided by library descriptive standards, but have used them as benchmarks for development of standards amenable to the nature of archives. Yet, they have not entirely abandoned library standards, and have made efforts to maintain comptaability with library systems. If the goal of unified information access systems is valid and attainable, we must support compatability and yet satisfy the needs of specialized materials. Only with the cooperation and mutual understanding of archivists and librarians will this goal be reached.

NOTES

[1] Explanations of the need for descriptive standards are presented in Nancy A. Sahli, "Interpretation and Application of the AMC Format," The American Archivist, 49(Winter, 1986):10 and Steven L. Hensen, "The Use of Standards in the Application of the AMC Format," The American Archivist, 49(Winter, 1986):32-33.

[2] The use of these systems has in my experience always been promoted by an anticipated increase in accessibility of archival materials. However, comments by participants and presenters at the 1989 Society of American Archivists Annual Meeting indicate that there is a dearth of user studies to substantiate the supposition that users find archival records in their searches and that they understand the records when their searches are successful.

[3] Sahli, "Interpretation...," p.10-11; Hensen, "The Use of Standards...," p.33; David Bearman, "Archives and Manuscript Control with Bibliographic Utilities: Opportunities and Challenges," The American Archivist, 52 (Winter, 1989):27,31.

[4] In this paper the term "archival" is applied to all varieties of historical documents maintained in archives, including institutional records and personal manuscripts.

[5] The story of early efforts at development of archival descriptive standards is related in Richard C. Berner, "Archival Management and Librarianship: An Explanation of Prospects for their Integration," in Advances in Librarianship, vol. 14 (Orlando, Florida: 1986) p.270, and Steven L. Hensen, "Squaring the Circle: the Reformation of Archival Description in AACR2," Library Trends, 36(Winter, 1988), p.540-542.

[6] The classic description of evidential value, which is the basis for maintenance of archival materials wihin their context, is found in T.R. Schellenberg, Modern Archives, Principles and Techniques (Chicago: 1956) p.139-148. Schellenberg also discusses differences between library and archival cataloging on p.22-23.

[7] The document that spurred this research effort was a report by Elaine Engst of Cornell University entitled "Standard Elements for the Description of Archives and Manuscript Collection:" (1980) that was written for the Society of American Archivists National Information Systems Task Force. The paper suggested that there were common elements of archival descriptive practice among American archival repositories and that some of these data elements were shared by library cataloging practice. This report became the vanguard of the development of the MARC AMC format. See Hensen, "The Use of Standards..." p.33; Berner, p.270-274.

[8] Hensen, "The Use of Standards...," p.34.

[9] A discussion of the use of different levels of cataloging and the role of the finding aid as the chief source of information is available in Hensen, Steven L., Archives, Personal papers and Manuscripts: A Cataloging Manual for Archival Repositories, Historical Societies and Manuscript Libraries, (Washington, D.C.: 1983) p.2-3.

[10] OCLC restrictions on number of characters per field, number of characters per record and number of fields per tag group are presented in Online Systems: Cataloging, User Manual, 2nd edition Dublin, Ohio: 1984) Rule 12.1.3.

[11] Examples of local systems with more lenient record length restrictions include the MicroMARC:amc software package, which limits a single MARC AMC record to 200 screens of 99,999 bytes (See Frederick L. Honhart, "MicroMARC: amc", OCLC Micro, 3 (June, 1987) p.15. and the CARL PAC used at Arizona State University. Although record length restrictions are not presented in the user documentation provided by the Colorado Alliance of Research Libraries a number of records currently exist in the CARL PAC at Arizona State University that exceed OCLC restrictions. These records were entered from sources other than OCLC tapes.

[12] "SAA Education Office Schedules Workshops," SAA Newsletter (September, 1987) p.9; "Library Descriptive Standards: An Introduction for Archivists," SAA Newsletter, (March 1988) p.9.

[13] "Recommendations of the Working Group on Standards for Archival Description," unpublished typescript, 1989, p.2-3.

[14] Robert P. Spindler, 1989 SAA Annual Meeting notes.

INTERDEPARTMENTAL COOPERATION--MAKING THE UNIVERSITY OF ARIZONA LIBRARY STRONGER

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The 80's have been a decade of change and of increased expectations of service in large academic libraries. Some of the changes we have faced and to which we have adapted have been technological.

In 1986, at the University of Arizona Library, we began implementing an automated serials control and acquisition system and in 1988 we implemented a prototype online catalog. In both cases, the manual system that these systems would someday replace were run in tandem with the new systems. Only in September of 1989, three years later, were we able to have a "funeral" for the manual check-in card files for serials.

In the reference areas we added computer assisted reference services in the late 70's and have expanded this in the past years with a variety of end user systems including QuickSearch (now in its second edition), CAS Online, and a number of CD ROM databases in various locations in the library system.

A tracking system for the backlog of uncataloged materials (a well documented problem in large academic libraries) has gradually moved from order slips filed in the card catalog to brief records on the online circulation system and now another segment, the order records for science materials, accessible to the public via the online catalog.

These changes have raised the expectations of our patrons and have consequently increased the stress on staff in both public services and technical services. No longer is the backlog invisible. Patrons are aware of the existence of more materials, so they expect those materials to be available. The requests to retrieve and process these items on a high priority or rush basis come to the Pre-Catalog Section. The Section received 63 requests for items in processing in August and September 1988. In the same time period during 1989, the Section received 95 requests.

We are also expected to serve an ever growing population--more students mean more sessions of bibliographic instruction and more reference questions as well as higher circulation numbers. The Library Skills Program for Freshman English provided 116 sessions to 3800 students in 1986/87 and 149 presentations to 5100 students in 1988/89. The Central Reference Department had over 96,000 reference and directional questions in 1986/87 and nearly 120,000 in 1988/89. The Science-Engineering Reference desk transactions increased 30% in August-September 1989 over the same time period in 1988.

With the increase in students, there are more materials to be purchased, cataloged, and processed. As an example, the 568 theses and dissertations in 1985 produced at the University of Arizona has grown to 654 in 1988, with each receiving full cataloging.

On the other hand, the people-resources to implement new systems, to catalog increasing numbers of materials, to answer these references questions, to teach library skills, have not increased. Between 1982 and 1989 no new permanent staff lines (either classified staff or librarians) were allocated to the Library.

It would seem that we have few alternatives for dealing with these problems. We could either reduce the demand for these services or increase the supply.

The University of Arizona Library has found a number of creative methods to move forward and meet the challenge of more people and more service with a constant number of staff; to stretch the supply to fill the demand. Some of these methods have been implemented from the administration down, some have been suggested at the department or section level, and some have come from individuals.

One of the methods that we have used is split positions. We now have 5 split positions. The first was the Science Catalog/Science Reference position; then a position was split between the Catalog Department Authority Section and Computer Operations, the third was the Science Reference/Maps Reference Librarian, fourth was the Middle East Librarian position. This was previously full time in the Oriental Studies Collection and now is a position which does cataloging as well as collection development and reference. The fifth position was a staff position also in the Oriental Studies Collection, now half in OSC and half in Cataloging.

The half and half Authority/Computer Operations position is a case of an individual proposing cross training in order to develop his job skills. He had a computer science degree and knew that having familiarity with the in-house circulation system would make him more competitive the next time the one systems position became open. The cross-training was successful and his time was well utilized in Computer Operations. With the constant addition of PC's, GEAC circulation terminals and later the implementation of the serials and acquisitions system and online catalog, the position became a permanent split position to accommodate the increased demand for systems assistance.

The half Science Cataloger/half Science Reference Librarian position was created by the Administration. This position was a reallocated position--a reallocation of resources to the critical points of need. There was a demonstrated need in both the Catalog Department and the Science-Engineering Library for increased professional staff with science expertise. There was only one position available and the Library decided to follow the holistic librarian model and hire one person to do both jobs. Along with filling a need for help in both of these departments, this position is also an important line of communication which has been very useful in the implementation of the prototype online catalog in the Science-Engineering Library. This position also brings a different point of view to each department and an understanding of the unique perspective of the "other side" in decision-making.

An approach taken to ease the shortage of Reference staff in relation to the demands of increased enrollment is having some Technical Services staff spend 2-4 hours each week providing reference service, usually working in the collection with which they are affiliated. There is the obvious benefit to the Reference areas of having additional people to fill reference desk hours. There are other less tangible benefits as well. In working together stronger bonds are formed between individuals and recognition of each other's talents and expertise is possible and the bonds between the departments are strengthened through these individuals.

As a partial payback for time spent at reference by Technical Services staff, two Science Reference librarians and one Humanities Reference librarian have spent time assigning subject headings to University of Arizona theses and dissertations. In addition to expediting the processing of this material, the reference librarians gain insight into LC subject headings and current research at the graduate level; information they can transfer to their collection development activities.

These programs have decreased the conflicts often seen in large libraries between Technical Services Departments and Public Services Departments. The Technical Services people have an increased understanding of the needs of the public and of Public Services staff. Public Services staff know the people in Technical Services and know whom to contact with different problems and requests. Communication is better, both sides listen more and solutions benefit the public.

Another advantage of this "crossing over" is that our peer review process for annual reviews and promotion and continuing status reviews have increased validity with the greater understanding of each others' jobs.

Another area of moving across departmental lines and cross-training is the Information Desk in Central Reference at which staff from seven different sections or departments volunteer time. This was proposed as a way to decrease the pressure on reference staff by handling certain types of basic reference and directional questions and intercepting telephone questions for the reference desk during peak hours. For Fall semester 1989, the hours were increased to 10 a.m.-3 p.m. from 10 a.m.-2 p.m. The Information Desk statistics make up 15% of the overall total reference transactions.

The Interlibrary Loan Department is serving increasing numbers of patrons and filling more requests each year; both borrowing and lending items. They have received no increase in staffing and our student wages budgets have not allowed them to hire more students. What they have done instead is have all the permanent staff cross-train to perform all of the daily tasks within the department so that when someone is out sick, on vacation or on leave, all of the essential work of the department can continue. This also makes it easier for ILL employees to gain internal promotions and a newcomer to the department can be trained by a person who knows the job, not just a procedure manual. With this approach, the individual, the department, the library and the library community all benefit.

The Library Skills Program at the University of Arizona is an area that has always depended heavily on volunteers. There are two librarians in the Library Instruction Department, one of whom is in charge of Library Skills. During Fall semester 1989, there were 112 presentations given (only 4 less than the whole year of 1985/86.) Volunteers have come from all parts of the Library and many levels of staff as well as from the Graduate Library School to help with presentations of these instructional sessions. This program thus serves it's primary goal of introducing new students to the library and providing them with the necessary skills to successfully utilize the library and its collections. An added bonus is that it has given people with little or no public speaking background, such as Graduate Library School students, an opportunity to speak to a group using a prepared format.

The results of these examples of cooperation have been increased inter- departmental communication and empathy with the other fellow's job. In addition, an ongoing dividend of working in another area part of the time is the diversity it brings to the sharing departments. The overall result is that the Library is more unified and runs more cohesively when we participate as a team rather than separate units working at cross purposes.

In times of limited resources, creative ways of problem solving offer the upportunity to redefine traditional lines of division between job duties, departments and divisions and keep the Library moving ahead into the future. Because, "A body at rest tends to stay at rest and a body in motion tends to stay in motion," or as a famous runner once said, "You can't get anywhere if you aren't moving."

LIBRARY EXPRESS: THE ESTABLISHMENT OF AN ACROSS-CAMPUS DOCUMENT DELIVERY SERVICE

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The conference theme of "Crossing Borders" tends to lead one's thoughts towards international borders. This paper will focus, instead, on a border crossing that is a lot closer to home--just getting patrons to cross the threshold into the library to use the facilities. Determining how to convert non-users into library patrons is difficult, at best; all of the public relations in the world will never get some people into a library. Even at academic institutions, some students pride themselves on getting through college without ever using the library. At Arizona State University, we have a solution. If users won't cross the border into the library, we'll bring the library to them, with Library Express, our fee-based document delivery service.

Patrons wishing to use the service fill out an application which gives the library the authority to check out materials to the user's ID number. The application also confirms the patron's willingness to pay for the service and the applicant's responsibilities regarding copyright compliance and returning or renewing materials. Once an account is established, the user simply lets us know what library materials are needed. Our staff will then pull requested books and check them out to the patron, or photocopy journal articles. We then deliver everything to a designated delivery point convenient to the user. It's not entirely trouble-free; we don't do research! We do eliminate the time-consuming and often frustrating aspects of locating desired materials in the stacks; standing in line at Circulation; and any inconvenience connected with getting to the library.

Since Library Express is a service of convenience, rather than necessity, we feel no compunction about charging. A brochure fully describing the services and the costs is available. Basic costs include $1.00 for every volume pulled and $.50 for every 1-5 pages photocopied with extra fees assessed for looking up call numbers or billing users. The service is operated on a cost-recovery basis, rather than a profit-making basis. Our rates reflect the lowest possible level required to cover costs. We began in January, 1989, serving only ASU employees who had an office within a designated delivery route. During the summer session we expanded the service to students and to employees with offices beyond the delivery route by adding a Pull & Pick-Up Service.

Besides simply describing Library Express, I would like to explain how the service came to be. My ulterior motive is to encourage others to take a few risks and be willing to gamble on new services even if you don't have megabucks in your budget. Granted, one must have some funding to implement new programs, but often the money is available when one assesses the total operation. If we could do it on a shoe string budget, so can you!

So, what goes into starting something new? Library Express planning included:

1) Determining the need for a new service.
2) Planning the service.
3) Financing the operation.
4) Laying the foundation.
5) Opening for business.
6) Reassessing needs and adjusting to changes.

7) Enjoying your success, or learning from your mistakes.

These steps will be pretty much the same regardless of whether your service is a document delivery service or something totally different. I will briefly explain this process as it relates to Library Express.

Determining the need for a new service

Much of the early planning for this service was done before I was associated with the Interlibrary Loan/Document Delivery Services at ASU. Bobbie Gentry, the Head of the ILL Lending Unit (which includes the Document Delivery Unit) was involved in all of the early planning, and briefed me on much of the historical data on the project. A "User Survey" was conducted in the early 1980's. One of the recommendations originating from this survey was for a service to deliver library materials to faculty members. At that point in time the idea was just a dream, but eventually, an on-campus delivery service was seen as complimenting other library services being planned, particularly dial-in access to our online catalog. The "User Survey" turned out to be an accurate instrument for predicting the need for this service.

Planning the service

The project became part of the library's five-year strategic plan in July, 1986. A Document Delivery Task Force was appointed which performed a literature search, and then reviewed relevant material describing similar services on other campuses. Public service departments in the University Libraries were also surveyed. The task force, then did a cost and staffing analysis for the proposed service. All of this was completed by June, 1987. A trial service to three departments known to have large numbers of faculty who were frequent library users was to begin in October, 1987. Assuming success, the service would be fully implemented by January, 1988. At that point, things bogged down because of lack of funding, although the recommendation remained part of the library's strategic plan for 1988-1993.

The plan indicated $10,000 needed to explore the market for timely, low-cost delivery of library materials on a cost recovery basis. $50,000 was listed as needed between 1989-93 to implement the delivery program, if the trial period was successful. The first $10,000 estimate covered the task force's recommendations for equipment needs, office furnishings, phone lines, connecting with the on-campus electronic mail system, and an electric Cushman cart as a delivery vehicle. Staffing recommendations included a Library Assistant III (one of the library's highest paid paraprofessional levels), plus 20-40 hours/week of student assistants.

It is doubtful that the service would have got off the ground, if we had stuck exclusively to this plan. That isn't a criticism of the plan. It was well-thought out, and the original plan still provides goals for the future development of Library Express. Such planning is essential to any new service, but the recommendations were too extravagant to be used as a start-up plan for a cost-recovery program. It was at this point that I became involved. I don't mean to give the impression that Mighty Mouse had just flown in to save the day, but there is usually a point in the planning phase of any project where it is good to call in an objective outsider to determine what can be realistically accomplished with funds and equipment already available.

Financing the service

Planning a new service is analogous to designing a new home. The first plan is the dream house with everything in it. Then come the budget estimates, and it is back to the drawing board, hoping for a final resolution that is practical without compromising the dream entirely. Thus, we began paring down the original plan and looking for alternate solutions that would not compromise service. We tackled staffing first. The Arizona State University Libraries already had a successful document delivery service going between the main campus libraries and Fletcher Library at ASU West. That service began with a half-time Clerk II under the supervision of the Head of the Lending Unit (a Library Assistant III). On-campus document delivery involved many of the same job duties, so we lowered the job classification accordingly, and fit the new service into the existing department structure. This required that the supervisor of the Lending Unit and the department head had to assume many of the responsibilities for getting the service up and running. We also eliminated student assistants from the start-up plan, assuming that we could employ them as needed when the service began paying for itself. Next we tackled office furnishings and equipment and discovered sufficient surplus furniture around the rest of the library to suffice. Eventually new furnishings for Library Express were acquired as part of the general building budget for an expansion to Hayden Library. We were also able to make due without installing a new phone line prior to moving into the new library expansion. Instead, a line already in the department was designated for this purpose. The Library Development Officer was approached to see if donors could be found to provide seed money to cover initial costs for items such as a telephone answering machine. Any "Friends" group could be so approached. A delivery vehicle was a major expense item. We began negotiations for sharing an electric Cushman cart used by the library's Receiving Area. As it turned out a new vehicle was on order for the Receiving Area, and it was decided that Library Express could have the old one! Even without this bit of good fortune, there were several times during the day when one vehicle could have been shared. The old Cushman was modified slightly so that materials would be protected from the weather and from theft. The work was done on campus by our Physical Plant for a very nominal fee. We did away with the proposed trial service and went for broke, serving all departments within the delivery route. By reducing our staff needs, and by using equipment already on hand, we saved about $18,000. Our total start-up costs included about $5,000 for salaries and around $1,000 for equipment, office supplies, printed brochures and forms, and copy cards to operate the photocopy machines.

Laying the foundation

This is the behind the scenes work that must be done before any new program is begun, and it may vary with each program. Before Library Express could open for business, we had to establish procedures and policies; get a permit to drive a vehicle on campus; modify the Cushman vehicle to meet DPS (Department of Public Safety) requirements; establish financial accounts; write a job description, and recruit and hire a Clerk II; arrange for priority photocopying with the Library's Copy Service when requests exceeded what a half-time employee could handle; and, make similar arrangements with another department to share bookkeeping services, if our half-time Clerk II could not keep up with everything. Brochures and forms had to be designed and printed. A logo for the service (not to mention a name) had to be decided on before any of the forms and brochures could be printed. The red tape seemed endless. It took six months after we hired the Clerk II before we actually began service, but they were not idle months for this employee. James Stute, the successful applicant for the new position, was actively involved in this phase. He set up the bookkeeping system; worked with DPS to develop a route; designed the modifications to the Cushman; made most of the

preliminary contacts with the various departments on campus; and posted or delivered advertising to every part of the campus, while learning the library collections and routines for document delivery.

Opening for business

After the preliminary planning, opening was almost anti-climatical. The main activity at this time was advertising the new service. Promotional activities would vary in individual libraries, but thisis a sampling of what we did. Library Representatives in each department within the delivery route were contacted and the new service explained. In some cases we were invited to department meetings to address larger groups of faculty. Subject Specialists in the University Libraries were also made aware of the service so they could promote it during liaison activities. Articles were published in two publications read regularly by ASU employees. We avoided the school newspaper, since students were not originally eligible for service. Announcements were made on the electronic mail system at ASU reminding users that they could use the E-mail system to submit requests. Permission was obtained to post fliers and place brochures in strategic places all over campus. Brochures were placed in orientation packets for new faculty. We are still coming up with new ideas for promoting the service, but "word-of-mouth" has turned out to be the most effective advertisement!

Reassessing needs and adjusting to changes

I wish that I could say that Library Express was an overnight success, but it wasn't. Business was disappointingly slow the first quarter, although it grew steadily. We guarantee 48 hour turn around, but most requests are delivered within 24 hours, and more often than not, we give same-day service. Speed and quality of service were the main factors in garnering new clients. We originally envisioned driving the same delivery route each day picking up requests and delivering materials on a regular schedule. Business was too sporadic to warrant that, so we now rely on clients calling us when they want us to pick up a request or materials at their office. Since library users frequently complain about filling out request forms, we expected most requests would come in over the telephone or over the campus E-mail system (PROFS), but comparatively few requests arrive via these systems; the majority of requests received are on printed request forms which the patron has filled out and dropped off personally at our department or one of the branch libraries.

Not having to stick to a specific delivery schedule and route, allowed us the flexibility to expand the service to ASU students and to employees whose offices were outside the delivery route. We experimented during the fast-paced summer session with a trial Pull and Pick-Up Service which provided services almost identical to regular Library Express services except that we hold the materials for pick-up at the Interlibrary Loan/Library Express counter rather than deliver it. Phone requests and billing are restricted for the Pull & Pick-Up Service, but with no deliveries and less bookkeeping, we are able to offer speedy service on a high volume of requests. This service proved to be quite popular, surpassing the number of requests received through the regular Library Express service. Our business more than doubled and has continued to grow rapidly ever since.

Another innovation involved subcontracting with FIRST, another fee-based service within the University Libraries. FIRST provides a broad range of services, primarily to non-academic clients rather than ASU-affiliated staff or students. Rather than having staff doing basically the same tasks (pulling books and photocopying articles), FIRST has Library Express retrieve and photocopy documents from branch libraries, thus reducing their staffing

requirements and eliminating much of the competition for copy machines between the two departments. While at first glance, this might seem like a case of "robbing Peter to pay Paul," both FIRST and Library Express are self-supporting through the fees paid for their respective services. By using Library Express to handle some of the document delivery aspects of their service, FIRST staff time can be devoted to other endeavors, so this arrangement benefits both services. With the addition of the FIRST account and the Pull & Pick-Up Service, Library Express has been able to cover all operating costs since July, aside from the salary of the half-time Clerk II. It is very likely that we will be able to cover that as well within the next fiscal year--not bad for a service recently inaugurated with no separate budget or funding grant.

Enjoying your success or learning from your mistakes

Library Express is not designed to be a profit-making business, but strictly a cost-recovery service. During this first year, almost everything is going right back into the service. We now have the funds available to hire a student assistant, so that the service no longer has to be operated on just a part-time basis. There are still a few items of office equipment to be purchased, but we also now have the funds available to acquire most of what we need. The student assistant and extra office equipment will not only improveLibrary Express' service, but will also benefit the rest of the department, because the equipment will have multiple uses and the Library Aide will also assist throughout the department during slack times with Library Express. So just as Library Express was more-or-less pieced together using equipment on hand, in the near future, it will be giving back to the organization more than was borrowed in the beginning.

RESOURCE SHARING: A MODEL

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INTRODUCTION

The ASU West Campus in Phoenix has been in existence since 1984 offering library services to ASU West Campus patrons. It was decided at the time the West Campus Library was established that the integrated on-line system would be shared with the Tempe campus libraries. Therefore, our patrons have bibliographic access to everything owned on the Tempe campus (2.5 million items) as well as what the West Campus Library owns (currently 65,000 items). It is approximately a 45 minute drive to the ASU Tempe campus. Driving to Tempe to borrow items owned by libraries on that campus is not an option most West campus patrons are willing to consider. Providing "quick and efficient" access to the Tempe campus collections is essential. Using electronic and technological capabilities document delivery requests are transmitted to the Interlibrary Loan staff on the Tempe campus. In fact several papers and poster sessions at the state and national level have addressed these electronic and technological accomplishments.

My paper does not address electronic or technological issues. Resource sharing encompasses much more than technology; technology is merely a tool. In this paper I will briefly summarize the findings of a literature search designed to elicit information on resource sharing, document delivery, and Interlibrary Loan. I will then discuss the resource sharing model that has been developed between the ASU Tempe and West campus libraries. I will conclude by raising the question "Where do we go from here?" to make resource sharing an even more efficient and viable reality for all libraries.

Much has been written about resource sharing, document delivery and interlibrary loan. Each of these terms is used in the literature to describe similar processes. I will define how I use these terms in this paper.

Resource sharing is the collaborative and cooperative process of enlarging the number of titles available to library users. This may be accomplished through formal interlibrary loan borrowing and lending using a bibliographic utilities such as OCLC or through local/statewide networking arrangements such as ILLINET.

Document Delivery is the physical process of delivering an item from one location to another, usually through use of a courier. However, at the West Campus we refer to resource sharing, interlibrary loan, and transfer of materials as Document Delivery.

SUMMARY OF THE LITERATURE

In the literature it was clear the majority of what is written about resource sharing, interlibrary loan, and document delivery primarily addresses the philosophical advantages of sharing or the technology available to transfer information. Those elements identified as essential to effective resource sharing are:

-philosophical support from all levels of library administration
-financial support of the program
-demonstrated mutual benefit
-technology to support transfer of information
-agreement between libraries regarding use of collections and turnaround time (communication)
-development of interstaff cooperation (communication)

The literature emphasizes that resource sharing is not to be used as an alternative to local collection development. It is not a way to deal with reduced acquisitions budgets. Library cooperation rarely generates identifiable dollar savings. Demonstrated mutual benefit and communication between libraries were elements stressed throughout.

RESOURCE SHARING MODEL

I will now elaborate on how the ASU Tempe and West campus libraries' resource sharing model incorporates and elaborates on each of these above mentioned elements.

Philosophical Support From All Levels of Library Administration

When ASU West Campus was established it was stipulated that the West Campus library would not be a comprehensive research library. Easy and rapid access to the ASU Tempe campus libraries research collections, as an alternative to building research collections, is a concept supported by University administration, the Arizona Board of Regents, the legislature, as well as library administrators. Without the ASU Dean of Libraries' strong endorsement of resource sharing operationalizing the model would not be possible.

Financial Support of the Program

Efficient resource sharing is critical to our overall library program. Typically, academic libraries provide 95 - 99% of all patrons needs through on site collections. We currently meet only 66% of our patrons needs through on site collections supplementing the rest through our Document Delivery service. Adequate funding for technology and staff is necessary to support this service. The West Campus continues to provide needed funding, which includes funding staff housed on the Tempe campus.

Demonstrated Mutual Benefit

A benefit realized by the West Campus Library through the Document Delivery service is the ability to provide our patrons fast and efficient access to the ASU Tempe campus libraries' research collections. This access allows the West Campus Library to provide a viable alternative to on site research collections. There are two identifiable benefits realized by the ASU Tempe campus libraries. The first is an innovative staffing arrangement, whereby we fund staff housed in the Hayden Library Interlibrary Loan department on the Tempe campus. This arrangement provides the West Campus Library with staff who's primary responsibility is to process the West Campus Library's requests as soon as they are received. We frequently see items received in the afternoon when the request was transmitted that morning. When the staff are not filling West Campus Library requests they may be used to supplement the Interlibrary Loan staff. The second benefit is that the West Campus Library is beginning to serve as a second copy location for Tempe campus libraries' patrons.

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Technology To Support Transfer of Information

The West Campus Library utilizes electronic and computer technology to transmit and store all Document Delivery data. Implementation of the telecommunications link was accomplished by coordinated efforts of electronic specialists from both Tempe and West campus libraries.

A borrowing/lending agreement has been drafted. The agreement is an attempt to formalize all that we have developed in this Document Delivery service. Elements were agreed upon by representatives from both Tempe and West Campus libraries. Those elements contained in the agreement are:

I. Service
-Materials that will/will not be loaned
-Terms of loan to ASU and Non-ASU borrowers
-Turnaround time
-Other Services (recalls and searches)

II. Cost/Charges
-Staff costs
-Photocopy costs
-Replacement cost/Overdue fines
-Net lending

The agreement calls for prepayment by the West Campus Library. The Document Delivery database provided valuable statistical information which aided in estimating both staff and photocopy costs. Tracking all Document Delivery activity is possible because of the database. I mention this because the literature indicates much of the information available on resource sharing is based on impression not fact. Final approval on the agreement should be received before the end of the semester.

Development of Interstaff Cooperation (Communication)

Understanding the different campus environments and knowing peers on the different campuses is essential to interstaff cooperation. In support of interstaff cooperation Tempe campus Interlibrary Loan and Access Services Department Heads as well as the West Campus Access Services Department Head are committed to regular staff interaction both in person and over the telephone.

CONCLUSION

Satisfaction with the Document Delivery service among West Campus faculty and students is very high. I think we are seeing a new generation of users who are more content to rely on remote collections for much of their information needs if delivery is timely. By building on administrative and financial support we developed a Document Delivery service around telecommunications technology, remote staffing, and on-going communications.

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WHERE DO WE GO FROM HERE?

I want to build on the statement that we are seeing a new generation of users who are more content to rely on remote collections for much of their information needs. By making access to bibliographic information beyond what the library collects ever present (online catalogs, bibliographic utilities, online searching, CD-ROMS), are we not setting up some unrealistic expectations for our users? Are we not in effect telling them that this information is immediately available? Yet, access to much of the actual text is not anywhere near as rapid as access to the bibliographic information. How long can we expect our patrons to remain docile when we take such pride in baiting their expectations about the expansive world of knowledge that exists only to crush their excitement by saying the text is not easily or quickly available? Even the ASU Tempe and West Campus resource sharing model which generally provides 48 hour turnaround time is not going to be sufficient much longer. We are raising generations of patrons who expect "instant" gratification. I think libraries must begin to question the time it takes to provide full text information to patrons when the information comes from a remote location. If we don't begin identifying and developing rapid access to text our credibility as information providers is likely to be questioned. The current methods of delivery which rely on courier or mail services are rapidly becoming antiquated. How much longer can we be content with access to text which lags far behind access to bibliographic information?

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RESEARCHING INTERDISCIPLINARY TOPICS ONLINE: A METHODOLOGY FOR EVALUATING DATABASES

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Today I'm going to present an overview of a pilot study that Ruth Dickstein and I conducted last spring. Ruth is another Central Reference librarian at the University of Arizona. A more detailed account of this study will appear as a chapter in the book Women Online to be released by Haworth Press in January 1990. Along with the study summary, I'm going to give you an account of the process we went through to complete this research. I debated about whether or not to do this, because just to get up and present the finished product can be so impressive. But in the end, it was this that made me decide to talk about the whole project -- i.e. what went wrong as well as what went right. This was a consuming project for several months, so friends and colleagues would routinely ask how it was progressing, and they would routinely get the latest horror story. After a while they quit asking. But the response I got from almost everyone was "That sounds like real research -- I could never do that." At the same time, I have had many conversations with colleagues where we collectively whine about the fact that everything we do in our jobs has already been written about. Yet, as academic librarians we are expected to, and most of us want to, make contributions to the profession. Well, I offer myself up as proof that even ordinary librarians can figure out how to conduct an original study, carry it out to completion, and yes, even enjoy the process.

You may wonder how we got into this. Ruth, as Women's Studies Librarian at the University of Arizona, got an offer from the editors of this book to do a chapter on online searching of women's studies in social sciences databases. Ruth immediately made a brilliant move in deciding not to take this project on alone. (Remember the buddy system? Sink or swim together.) So she invited me to sink or swim with her. What are my qualifications? Well, like many of you, I skipped the research methods class in library school. But I did audit the course at the University of Arizona several years ago and I learned a great deal. However, if you don't have that option, there are others you can take. There are books available that will give you a good grounding. It helps to work with someone that has done some research, or to have colleagues that you can consult. Start small. Notice that I refer to our project as a pilot study instead of a full blown research project.

Purpose of the Study

The field of women's studies is very interdisciplinary. The same can be said for a great many social science disciplines. There is not a database specifically designed for women's studies topics, and there are always a number of databases which could be appropriate to a particular topic or issue. Searching multiple databases, as we all know, can be costly and time consuming, and will often result in a great deal of duplication. The idea of searching one "super database" is very attractive, and we were further challenged in this study by a claim ISI makes about their Social Sciences Citation Index:

"Because SSCI gives you in-depth, multidisciplinary coverage of the social sciences literature, there's no need to use several discipline-oriented indexes to achieve truly comprehensive searches. SSCI lets you start and finish a search with one reference tool. With this in mind, we formulated the following study questions:

1. What are the most productive social sciences databases for finding women's studies materials?

2. Which databases offer the least duplication, or the greatest number of unique citations?

3. Is multiple file searching necessary, and if so, to what extent?

4. Which databases cover the core women's studies journals?

I am not going to talk about number four during this presentation.

Methodology

Having formulated our study questions, the next step was to choose a methodology. The editors left the design of this chapter up to us. We could address the topic in whatever way we wanted. Being librarians, the first thing we did was read several articles on the topic. The literature revealed that a number of different methods have been used to evaluate databases. We found two articles that used some variation of the subject profile technique, one with criminal justice topics and one with pesticide information. We decided to use this method because it is comparatively easy to implement, and it would provide the information needed to answer our study questions. We also particularly liked one of the formulas used in the pesticide study called the "relative index of uniqueness." I'll explain this in more detail in a minute, but one of the things that Daniel Meyers et. al. did with this number was to figure out which combination of databases would yield a certain percentage of unique documents. I'll elaborate. Say you have ten databases that you routinely search for women's studies information. All of the databases have some information on women's studies but there is a great deal of overlap between them. If you could figure out which combination of databases would yield 80% of the unique documents, you could save time and money. This sounded great to us, and we decided that we wanted this to be one of the results of our study. Remember this. Let me go on to describe the subject profile technique. The first part of this technique involved running a series of "hot topics" or keywords across a large number of potentially appropriate databases to screen for those with the best overall coverage. The keywords included terms like women, feminism, sex bias, lesbians, matriarchy, and all relevant permutations of these terms. The ten databases with the best overall coverage were then used for the second part of the study. (See Appendix I for the list.)

For part two, we developed general profile search strategies for three topics: divorce, battered women, and comparable worth. These profile strategies were then run on the ten databases and the retrieval was printed off. All of the citations retrieved were examined to determine whether or not they were relevant to the topic. The irrelevant cites, or false drops were counted and set aside. The rest of the study focuses on the relevant citations only. This step gave us a look at the precision offered by each of the databases. In other words, what percentage of the retrieval in a particular database was relevant to the search question? Next, the retrieval from each database was color coded, the citations were taped to 3 x 5 cards, and the cards were interfiled by author. This places duplicate citations from different databases together. Each unique citation is given a numerical value of one. So if a citation appeared in only one database, it is scored as a 1 for that database. If a citation appears in two databases, it is scored as 1/2 in each of those databases; in three databases it counts as 1/3 in each, etc. These numbers were all entered onto a spreadsheet program. This process was carried out three times, once for each profile strategy.

Let me digress here to talk about getting our hands dirty doing research. There is very little glamour involved in this nitty gritty part. I found that it pays to have many friends and to

Let me digress here to talk about getting our hands dirty doing research. There is very little glamour involved in this nitty gritty part. I found that it pays to have many friends and to call in all favors. When we were examining citations to determine relevancy, we looked at something in the neighborhood of 2000 citations. My friend, Janet Fore, made the mistake of saying that she thought she'd be interested in knowing more about how this study works and she found herself examining hundreds of citations. And how did those 1000 or so relevant cites get taped onto cards and alphabetized? It all started when I invited people over to watch a basketball game and passed out scissors and tape along with the beer and chips. I won't even mention the hours it took to enter the data onto the spreadsheet. There is a fair amount of grunt work involved in a study like this, and I think you should know that up front, but I don't think it should necessarily deter you. There is also a great deal of intellectual activity involved and I learned something every step of the way -- not all of which was directly associated with study results. I learned how to use spreadsheets, and I also learned that shareware is not equivalent to copyrighted software in the same way that generic drugs are to brand name drugs.

Back to the study. By using spreadsheets we were able to calculate the recall for each database, that is, what percentage of the total number of unique citations appeared in each individual database. We also arrived at the relative index of uniqueness that I mentioned earlier. This is a decimal number that ranks the database according to the number of unique documents retrieved. A large point percentage suggests a database with either 1) many citations (with duplicates in only a few databases), 2) multiple unique citations, or 3) a combination of the two. (See tables 2, 3, and 4)

At this point, we had all of these different figures and it was exciting to examine the databases in terms of these various factors, but now we were ready to come up with that ranking that would tell us which combination of these databases would produce 80% of all relevant citations. So we went back to the Meyers article (which we'd been following pretty closely so far) to get the formula that would tell us this, only to find that he had neglected to include this formula in the article. He listed his results and implied that he'd used a mathematical formula to arrive at them, but there was no hint of a formula! At this point we panicked. I attempted to call the authors but they no longer work at the same place and I was unable to locate them. Don Frank, Head of the Science-Engineering Library, who has a background in math, thought it was an intriguing problem and attempted to work it backward. The solution, however, remained elusive. As we were under time constraints, we finally had to give up on obtaining this ranking and draw our conclusions from the data we had.

Results

We were able to present some interesting results. Let's look at them in terms of our study questions. I'll begin with number three: Is multiple file searching necessary and, if so, to what extent? The answer is yes, if you are aiming for any sort of comprehension. SSCI did not provide one stop shopping, however, SSCI is the only database in which more than ninety percent of the recall was judged relevant in all searches. This makes sense if you think about the fact that these are mainly key word in title searches. SSCI was not, however, the best database in terms of uniqueness or recall except for the economic issue.

Second, which databases offer the greatest number of unique citations. NCFR ranks very highly for both uniqueness and recall for the battered women and divorce searches, but this result needs some interpretation. This database includes a great many things other than journal articles -- books, pamphlets, government documents, media, conference proceedings, and reports. The high marks in recall and uniqueness are offset by several problems. Broad indexing lowers the precision (relevance). Forty-five percent of the divorce citations and twenty percent of the battered women citations were judged irrelevant. Poor authority control

results in more internal duplication than found in any other database. Journal indexing appears to be very selective. This database, nonetheless, is a gold mine for books, ephemera, fugitive publications, and other non-mainstream materials. This was a database that I seldom used before our study, but have used much more frequently since. One day we had a woman in looking for material on sex addiction. We were finding almost nothing in the better known databases, but NCFR turned up four books on the topic. I search this database selectively. I think other databases are better overall for journal coverage, but nothing beats NCFR for everything else.

Third, which are the most productive databases. We listed PsycINFO and PsycALERT as separate databases which is somewhat skewed because PsycALERT is so much smaller, but I learned several valuable things. First, almost all of the retrieval was relevant because the indexing is minimal. Second, late issues of journals and newly acquired backfiles are entered into PsycALERT so it was not limited to only the most current materials. Some articles retrieved were three years old. Needless to say, I now routinely search PsycALERT whenever I'm searching PsycINFO. Mental Health Abstracts was included to determine if it would be a good supplement to PsycINFO. However there was almost complete overlap between the two. Although this study sample is small, it may be safe to assume that MHAB would not make significant contributions to most searches.

AWPE and Economic Literature Index were searched only for the salary equity topic and the results were interesting. They did not rank highly in uniqueness because the uniqueness factor shows which databases will retrieve the greatest amount of unique documents. Those databases which contribute a very small number of unique documents make a poor showing in this category. AWPE and ECON, however, include a number of very important economic documents and journals that are not picked up by the other social science databases. Although the actual retrieval was low, most of the documents retrieved were relevant and most were not duplicated in other social science databases. AWPE had some overlap with Agricola. No other database picked up working papers issued by economic research organizations. Ageline, likewise, produced only eight relevant documents but they were all unique citations. This database covers a variety of non-mainstream literature and selected journal articles on topics related to aging and the aged. With databases such as these, it is important to ask your patron ahead of time how hard they want to work to get their hands on documents, because much of this material is not held by academic libraries and can be difficult to locate.

In preparation for this talk, I went back to the spreadsheet file for the battered women search and manually manipulated the data by deleting and refiguring several times to arrive at that combination of databases that would retrieve 80% of the unique citations. This search retrieved 331 unique citations. NCFR accounted for 43% of the unique citations, NCJRS for 19%, PsycINFO had 13%, and Sociological Abstracts provided 8%. These figures are fascinating but getting them this way is far too time consuming to be practical.

We learned a tremendous amount through this study. We are now considering repeating the study with another subject area knowing that we could do it better the second time around. If we do take this up, we will definitely hire a math student to help us with the formulas.

APPENDIX I

DATABASES SEARCHED

Agricola (CAIN)

ERIC (ERIC)

Family Resources (NCFR)

Mental Health Abstracts (MHAB)

National Criminal Justice Research Service (NCJRS)

PsycALERT (PSAL)

PsycINFO (PSYC)

Social SciSearch (SSCI)

Social Sciences Index (SSI)

Sociological Abstracts (SOCA)

Abstracts of Working Papers in Economics (AWPE)

Ageline (AARP)

Economic Literature Index (ECON)

TABLE I

Search Strategy - Screening Search

DIALOG	BRS	WILSON
feminis??	feminis$2	feminism or feminist#
wom?n	wom$n	wom#n
dual()career? ?	dual adj career$1	dual adj career#
displaced()homemaker? ? or housewi??? or househusband? ?)	displaced adj (homemaker $1 or housewi$3 or househusband$1)	displaced adj homemaker# or displaced adj housewife or displaced adj house-wives or displaced adj househusband#
(gender or sex)()bias	(gender or sex) adj bias	gender adj bias or sex adj bias
incest or incestuous	incest or incestuous	incest or incestuous
rape? ? or rapist? ?	rape$1 rapist$1	rape# or rapist#
comparable()worth	comparable adj worth	comparable adj worth
sexism or sex()discrimination	sexism or sex adj discrimination	sexism or sex adj discrimination
marriage? ? or marry or married	marriage$1 or marry or married	marriage# or marry or married
mother????	mother$4	mother# or motherhood
lesbian???	lesbian$3	lesbian# or lesbianism
prostitut???	prostitut$3	prostitute# or prostitution
matrilin? or matriarch?	matrilin$ or matriarch$	matrilin: or matriarch:
homeless()wom?n	homeless adj wom$n	homeless adj wom#n

TABLE 2 - BATTERED WOMEN

CITATION DISTRIBUTIONS

	CAIN	ERIC	MHAB	NCFR	NCJRS	PSAL	PSYC	SOCA	SSCI	SSI
Total Documents	12	43	20	184	167	22	93	73	50	47
Number Relevant	11	35	11	147	98	22	87	69	49	46
Percent Relevant	92%	81%	55%	80%	59%	100%	94%	95%	98%	98%
Uniqueness Index	0.015	0.053	0.015	0.269	0.183	0.043	0.145	0.106	0.064	0.062
Percent Coverage	3%	10%	3%	43%	28%	6%	25%	20%	14%	13%

DATABASE RANKINGS

Percent Relevant	Uniqueness	Percent Coverage
1. PSAL	1. NCFR	1. NCFR
2. SSCI & SSI	2. NCJRS	2. NCJRS
3. SOCA	3. PSYC	3. PSYC
4. PSYC	4. SOCA	4. SOCA
5. CAIN	5. SSCI	5. SSCI
6. ERIC	6. SSI	6. SSI
7. NCFR	7. ERIC	7. ERIC
8. NCJRS	8. PSAL	8. PSAL
9. MHAB	9. CAIN & MHAB	9. CAIN & MHAB

TABLE 3 - DIVORCE

CITATION DISTRIBUTIONS

	CAIN	ERIC	MHAB	NCFR	NCJRS	PSAL	PSYC	SOCA	SSCI	SSI
Total Documents	59	118	14	452	62	55	250	197	168	123
Number Relevant	47	100	9	247	29	45	199	137	162	102
Percent Relevant	80%	85%	64%	55%	47%	82%	80%	70%	96%	83%
Uniqueness Factor	0.037	0.082	0.006	0.257	0.035	0.048	0.192	0.132	0.141	0.069
Percent Coverage	8%	16%	1%	39%	5%	7%	32%	22%	26%	16%

DATABASE RANKINGS

Percent Relevant	Uniqueness	Percent Coverage
1. SSCI	1. NCFR	1. NCFR
2. ERIC	2. PSYC	2. PSYC
3. SSI	3. SSCI	3. SSCI
4. PSAL	4. SOCA	4. SOCA
5. PSYC & CAIN	5. ERIC	5. SSI
6. SOCA	6. SSI	6. ERIC
7. MHAB	7. PSAL	7. CAIN
8. NCFR	8. CAIN	8. PSAL
9. NCJRS	9. NCJRS	9. NCJRS
	10. MHAB	10. MHAB

TABLE 4 - SALARY EQUITY

CITATION DISTRIBUTIONS

	AARP	AWPE	CAIN	ECON	ERIC	NCFR	PSYC	SOCA	SSCI	SSI
Total Documents	10	13	14	39	68	46	55	58	168	68
Number Relevant	8	12	37	37	57	38	45	46	157	67
Percent Relevant	80%	77%	86%	95%	84%	83%	82%	79%	93%	99%
Uniqueness Factor	0.02	0.02	0.03	0.06	0.14	0.06	0.09	0.11	0.33	0.11
Percent Coverage	2%	3%	3%	11%	17%	11%	13%	13%	46%	20%

DATABASE RANKINGS

Percent Relevant	Uniqueness	Percent Coverage
1. SSI	1. SSCI	1. SSCI
2. ECON	2. ERIC	2. SSI
3. SSCI	3. SOCA & SSI	3. ERIC
4. CAIN	4. PSYC	4. SOCA
5. ERIC	5. ECON & NCFR	5. PSYC
6. NCFR	6. CAIN	6. ECON & NCFR
7. PSYC	7. AARP & WPE	7. CAIN
8. AARP		8. AWPE
9. SOCA		9. AARP
10. AWPE		